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PAPER TRADE JOURNAL

NOVEMBER 30, 1944

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PAPER TRADE JOURNAL

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Vol. 119, No. 22

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

November 30, 1944

Congressional Committee Opens Paper Bids

Proposals For Supplying Government Printing Office With A Variety of Paper For Three-Months Period Beginning January 1 Are Received On Monday—Committee Will Consider Awards Dec. 4

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 27, 1944—Bids were opened today by the Joint Congressional Committee on Printing for paper for the use of the Government Printing Office for the three-months period beginning January 1, 1945. As has been the case quite commonly of late when proposals were advertised for supplying the Government Printing Office with paper for three-months and six-months periods, no bids were submitted on quite a few items. In cases of this kind, the paper will, as usual, have to be purchased on the open market. The committee will meet December 4 to consider awards. The bids were as follows:

Newsprint

No. 1—1,500,000 lbs., 24x36—64; rolls, 19, 24, 36 and 48 ins. wide (3-inch fiber cores, weight of cores and wrappers shall be included in net weight).

No bids.

Telephone Book News

No. 2—100,000 lbs., 24x36—45; rolls, 28, 38 and 48 ins. wide (3-inch fiber cores). (Weight of cores and wrappers shall be included in the net weight.)

Birmingham & Prosser Co. 5.38c

Machine-Finish Book

No. 3—120,000 lbs., 25x38—70; flat, cut 22½x31, 28½x48; 31¼x45½, 32x42 and 42x64 ins.

Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.97c
Marquette Paper Corp. ..... (ceiling price) 7.98c

No. 4—400,000 lbs., 25x38—70; flat, cut 24x38, 28x38, and 38x48 ins.

Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.89c
Marquette Paper Corp. ..... (ceiling price) 7.94c

No. 5—400,000 lbs., 25x38—70; flat, cut 24x38, 28x38, and 38x48 ins.

Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.95c
Marquette Paper Corp. ..... (ceiling price) 7.94c
Grand Paper Co. 7.98c

No. 6—200,000 lbs., 25x38—70; rolls, 28½ ins. wide. (3-inch fiber cores).

Perkins-Goodwin Co. 6.98c
Mudge Paper Co. 7.34c
Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.55c
Marquette Paper Corp. ..... (ceiling price) 7.29c
Allied Paper Mills ..... (total 200,000 lbs. lots 6, 7 and 8) 7.08c

No. 7—300,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide (3-inch fiber cores).

Perkins-Goodwin Co. 6.98c
Mudge Paper Co. 7.34c
Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.55c
Marquette Paper Corp. ..... (ceiling price) 7.29c
Paper Corp. of US 7.02c
Allied Paper Mills ..... (total 200,000 lbs. lots 6, 7 and 8) 7.08c

No. 8—300,000 lbs., 25x38—70; rolls, 19 and 38 ins. wide (3-inch fiber cores).

Perkins-Goodwin Co. 6.98c
Mudge Paper Co. 7.34c
Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.55c
Marquette Paper Corp. ..... (ceiling price) 7.29c
Paper Corp. of US 7.02c
Allied Paper Mills ..... (total 200,000 lbs. lots 6, 7 and 8) 7.08

No. 9—200,000 lbs., 25x38—70; rolls, 24, 36, and 48 ins, wide (3-inch fiber cores).

Perkins-Goodwin Co. 6.98c
Mudge Paper Co. 7.34c
Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.55c
Marquette Paper Corp. ..... (ceiling price) 7.29c
Allied Paper Mills 7.14c

No. 10—500,000 lbs., 25x38—80; flat, cut any size, min. width 24 ins., max. width 48 ins.

Central Ohio Paper Co. ..... (250,000 lbs. only) 7.39c
Mead Sales Co. ..... (300,000 lbs. only) 7.46c
Barton, Duer & Koch Paper Co. (aggregate on lots 3 to 10, incl. 1,000,000 lbs.) 7.40c

Offset Book

No. 19—1,000,000 lbs., 25x38—80; flat, cut 32x42, 34x44, 35x45, 36x56 and 38x48 ins., the grain to run lengthwise of the sheet.

Central Ohio Paper Co. ..... (180,000 lbs. only) 9.27c
Paper Corp. of US ..... (300,000 lbs. only) 9.26c

No. 20—3,500,000 lbs., 25x38—100; flat, cut 29x41, 32x42, 34x44, 38x48, 39x53, 42x58 and 44x64 ins., the grain to run lengthwise of the sheet.

Central Ohio Paper Co. ..... (180,000 lbs. only) 8.15c

Antique Book

No. 22—100,000 lbs., 25x38—90; flat, cut 33x43 and 38x50 ins.

Mead Sales Co. 7.18c
Barton, Duer & Koch Paper Co. 7.18c

50 Per Cent Antique Book

No. 26—80,000 lbs., 25x38—80; flat, cut 38x48 ins.

No bids.

Supercalendered Book

No. 33—250,000 lbs., 25x38—90; flat, cut any size, min. width 24 ins., max. width 48 ins.

R. P. Andrews Paper Co. 7.69c

No. 34—1,500,000 lbs., 25x38—90; rolls, 28½ and 38 ins. wide (3-inch fiber cores).

Mudge Paper Co. ..... (650,000 lbs. only) 7.33c
Central Ohio Paper Co. ..... (600,000 lbs. only) 7.31c
R. P. Andrews Paper Co. ..... (600,000 lbs. only) 7.33c

Machine-Coated Book

No. 37—1,000,000 lbs., 25x38—90; flat, cut 28½x48, 31¼x45½, 32x42, 35x45, 36x56, 38x48, 39x50 and 44x68 ins.

No bids.

No. 38—2,500,000 lbs., 25x38—100; flat, cut any size, min. width 24 ins., max. width 48 ins.

Barton, Duer & Koch Paper Co. 6.01c

No. 39—500,000 lbs., 25x38—120; flat, cut any size, min. width 24 ins., max. width 48 ins.

No bids.

Coated Book

No. 41—120,000 lbs., 25x38—140; flat, cut 38x48, 39x50, and 41x52 ins., the grain to run lengthwise of the sheet.

Consolidated Water Power & Paper Co. 6.565c

Ground Wood Mimeograph

No. 44—800,000 lbs., No. 36; flat, cut 32½x42½ and 38x48½ ins., grain as ordered.

Mead Sales Co. 5.80c
Old Dominion Paper Co. ..... (400,000 lbs. only) 5.7498c
Marquette Paper Corp. ..... (200 tons only) 5.75c

Chemical Wood Mimeographed, White and Colored

No. 45—1,800,000 lbs., white, No. 36; flat, cut 32½x42½ and 38x48½ ins.; the grain to run as ordered.

Whitaker Paper Co. ..... (200,000 lbs. only) 7.17c
R. P. Andrews Papers Co. .... (500,000 lbs. only) 7.24c

No. 46—100,000 lbs., blue, buff, green, pink and yellow. No. 36; flat,

(Continued on page 23)

Power Show Stresses Aid in War Effort

Exhibits Include Some of the Latest Developments In Industrial Devices and Instruments For Control and Distribution of Energy— Much of the Apparatus Was of Special Interest To Paper Industry.

The seventeenth National Exposition of Power and Mechanical Engineering was held at Madison Square Garden, New York, November 27 to December 2 inclusive. The show this year was organized with the primary purpose of aiding in the war production effort, and to assist in the furtherance of plans for the conversion of industry back to peacetime production.

The latest developments in apparatus for the control and distribution of energy were displayed. Equipment and devices for generating power, heat, ventilation, hot and cold water, compressed air and process steam were prominent among the exhibits.

The exhibits included a large display of power equipment and fuel handling devices. The distribution of power included piping, couplings, fittings of all kinds, packings, special and standard tools. Controlling devices on display included valves, pressure regulators and air-line fittings. Among auxiliary equipment were displayed proportionating devices, control systems, pumps, etc. and air conditioning apparatus. Instruments on exhibit included draft and recording gauges, water analyzers, flow meters and testing equipment. Processing apparatus included dryers, crushers, fans, humidifiers and mixers.

Among the exhibits of transmission apparatus were displayed belting, pulleys, speed reducers, chain, adjustable and automatic drives, etc. Other exhibits featured standard and special engineering materials and specialties, machine and portable tools in large variety.

The products of particular interest to the paper and pulp industry, well known in the industry by installations in many paper and pulp mills are summarized in the following exhibits of representative concerns:

Cambridge Instrument Co.

The display of the Cambridge Instrument Company included many of the important instruments used in industry. These were the combination O, CO, CO and H recorders, pH recorders, pH meters, etc. Also shown were areo-mixture indicators and surface pyrometers in roll, mold and needle models, for the rapid and accurate determination of temperature of flat, curved, moving and stationary surfaces. The following engineers were in attendance: B. O. Watkins, C. W. Campbell, H. F. Matthiessen, C. E. Irish, John Mackin, H. B. Huxley, R. W. Deemer, S. B. Young, J. D. Digby, H. N. Fawcett, H. E. Wood, R. V. Mills, J. G. Fleming, C. M. Worstall and W. H. Jefferson.

The Foxboro Co.

The exhibit of The Foxboro Company featured Foxboro dynalog instruments. In addition to these electronic devices the company displayed pneumatic instruments for liquid level, pressure, temperature and recording and controlling flow instruments. Representatives in attendance included C. C. Fuller, manager of the New York Office, Carl Sullivan and D. M. Hill.

Johns-Manville

The feature attraction in the Johns-Manville exhibit is an interesting demonstration of four miniature furnaces made of Johns-Manville Insulating Fire Brick. These furnaces are shown operating at temperatures of 1600° to 2600° F. In addition, the exhibit also includes other insulations in the complete Johns-Manville line. Refractory Products and Johns-Manville Packings for the Power Industry were also included. In attendance at the exhibit will be the following representatives of Johns-Manville: C. G. Dandrow, district manager power products, New York; E. D. Flavin, assistant district manager power products, New York; J. C. Crawford; N. J. Kent; W. J. McBurnie; C. M. Stuve; F. W. Decker and F. J. Condon.

Nash Engineering Co.

The exhibit of the Nash Engineering Company featured two units of particular interest to the pulp and paper industry. On display was the Nash large size vacuum pump, "L-10," with a capacity of 3,000 c.p.m. Another item of equipment on display was the Nash dryer-exhaust unit, for the removal of condensate and air from the drier to improve steam circulation. Representatives present included Carlton L. Clark, James A. Smith and C. Vicario.

Socony-Vacuum Oil Co.

The exhibit of the Socony-Vacuum Oil Company featured three giant "cutaway" blowups in color, illustrating the interior working parts and lubrication systems of the major prime movers—the steam engine, the turbine and the diesel engine. These detailed "cutaways," each five feet square, are of similar character to the full color illustrations which have featured Socony-Vacuum's current industrial national advertising.

At one end of the exhibit "The Inside Story" is continuously projected — Socony-Vacuum's famous motion picture on the correct lubrication of bearings, cylinders and gears. On another screen a continuous slide film projection on "Bearings and Their Lubrication" is on view.

On display are an interesting assortment of lubricant applicators—bottle oilers, wick feed oilers, multiple lubricators, force-feed appliances and other less familiar devices, also many of Socony-Vacuum's technical and educational publications, having to do with the lubrication of various types of machines and specific to many industries, including "Pulp and Paper Mill Lubrication."

John Waldron Corp.

The John Waldron Corporation featured at its exhibit the Waldron silent laminated steel gears. Also prominently displayed were the concern's bushed pin couplings.

Wallace & Tiernan Products, Inc.

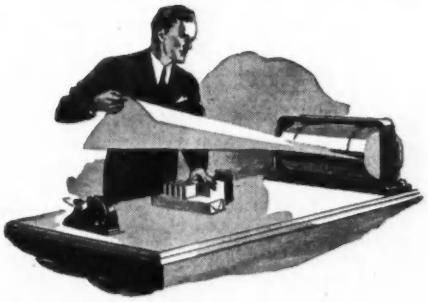
Wallace & Tiernan Products, Inc., featured the

(Continued on page 25)

DON'T PUT UP WITH MOLD!

Mold and decay assume different forms under different conditions. Hence, varying treatments are required if the costly inroads of spoilage are to be prevented.

That is why there are seventeen related products in the Dowicide group—each is designed for a specific job—and each has proved itself in that assignment.



Dowicide has proved its worth many times in the paper industry.

Applied as the stock emerges from the lapping machine, Dowicide inhibits mold stain and protects the pulp quality. Added to the stock chest, Dowicide prevents "souring" of pulp. Also finished paper that will come in contact with moisture can be made mold-resistant by incorporating Dowicide.

Other uses in the paper industry include protecting machine felts and preserving adhesives.

Write for complete information on how to prevent the destructive inroads of mold.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

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Among the many other Dow products serving the Paper Industry are: Methocel, Ethocel, and Caustic Soda.

DOWICIDE

GERMICIDES AND FUNGICIDES

DOW

November 30, 1944

Sulphite Liquor Can Produce Penicillin

Pulp Manufacturers' Committee Reports Progress In Extensive Research To Utilize Waste Sulphite Liquor—Some Derivatives of the Liquor Used In Making Sulphur Drugs — Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 20, 1944—Future production of penicillin may be affected to an important degree as the result of techniques for pilot plant biochemistry which were developed during research at the Institute of Paper Chemistry, Appleton, to find a means of ending the waste arising from sulphite liquor dumped into Wisconsin streams, it was announced last week by the Sulphite Pulp Manufacturers' Committee on Waste Disposal.

"One sidelight has shown that waste sulphite liquor can be used for producing penicillin," the report said. "Some of the derivatives of the liquor have been used in making sulphur drugs."

The Sulphite Pulp Manufacturers' Committee, which for the last five years has sought to eliminate waste pollution will, because of the progress, extend the research into a second 5-year period in an attempt to arrive at a practical solution.

A number of collateral lines have been developed. Among these are the development of products for war industry, including explosive ingredients, and substitutes for other substances, now scarce, whose nature cannot be revealed for security reasons.

Strike at Geo. A. Whiting Co. Ends

Operations were to be resumed Monday morning, November 20, at the Geo. A. Whiting Paper Company, Menasha, Wis., after a 16-day strike, it was decided last Friday at a meeting of the management and the union committee.

R. M. Sensenbrenner, general manager, said that conditions were unchanged since the start of the strike, when members of the International Brotherhood of Papermakers (AFL) walked out, after the company and the union failed to agree on terms of a new contract.

Friday's meeting followed receipt of a telegram by union officials from Leo Kotin, assistant director of the War Labor Board. The telegram was sent to Emil Noren, international representative; Adam Schwartzbauer, local president, and E. B. Lambton, international representative of the International Brotherhood of Papermakers.

Mr. Noren said the dispute was placed in the hands of the War Labor Board November 11, he had been informed by J. R. Steelman, United States conciliator. Arguments of the union and company will be presented before the case is settled. The telegram called the strike a violation of labor's no-strike pledge.

Mr. Noren said that differences between the company and the union involve a union membership clause, 2-week vacations after five years of service, adjustments in wage rates to eliminate inequalities and "call time," a problem which arises when men of other shifts are called in to repair paper machine breakdowns.

Dr. West Addresses Junior Chamber

Dr. C. J. West, bibliographer of the Institute of Paper Chemistry, Appleton, Wis., addressed the Appleton Junior Chamber of Commerce last week on the operation of the institute and its relation to the paper industry.

Stresses Need for Safety at Work

Need for training an employe in work safety instead of preaching safety to him was emphasized by C. E. Jurgensen, chief psychologist for the Kimberly-Clark Corporation, Neenah, Wis., when he talked to more than 72 safety directors and personnel directors in Wisconsin industries November 17 at a technical clinic at the Valley Inn, Neenah, Wis.

Mr. Jurgensen's talk, "Psychology in the Field of Accident Prevention," featured the afternoon session at which J. G. Dickinson, Milwaukee, Wis., presided. The clinic opened at 9:30 that morning and was concluded at 5 o'clock Saturday afternoon.

"Psychological factors lie behind a large proportion of accidents," Mr. Jurgensen said, pointing out that emotional upsets greatly increase the number of accidents because distortion of ability to make sound judgments results in poor muscular coordination.

Worries or unsolved problems cause emotional upsets that find action in showing off, deliberate and consistent breaking of company rules, carelessness, recklessness and irresponsibility, Mr. Jurgensen stated, and it is well known among safety workers that "these action frequently lead to serious accidents."

Among the five companies honored by having its representatives appear on the panel was the Neenah Paper Company, which I. J. Stafford, manager, represented.

Registration Good for Workers Course

More than 300 persons have registered for the non-technical course for pulp and paper mill employes, which had its first class session Wednesday evening, November 15, in the auditorium of the Menasha School of Vocational and Adult Education.

The speakers at the first meeting were A. G. Wakeman of Kimberly-Clark Corporation, who discussed "History of Paper-Making in the Fox River Valley," Otto Kress of the Institute of Paper Chemistry, Appleton, Wis., who spoke on "Trends in the Paper Industry," and John G. Strange, also of the Institute, on "The Pulp and Paper Industry, Its Future."

Registration is restricted to employes of the pulp and paper industry. Twelve meetings have been planned, to extend through February.

Honored for Long Service

George Riggles was feted Thursday evening by workers, supervisors and Kimberly-Clark officials for 50 years of service. He started work in the old Vulcan-Tioga mill at Appleton in 1894. The mill is no longer in existence. Mr. Riggles worked at the Neenah mill from 1907 to 1909 and in the fall of the latter year went to Kimberly, where he is still employed. He was presented with an engraved gold watch and other gifts.

COOPER DENSICAST

STAINLESS CASTINGS

Stronger .... More Corrosion-resistant

Their superior grain refinement makes Cooper Densicast stainless castings stand up longer. They have higher physicals and greater resistance to corrosion—without altering the chemical composition of standard analyses such as types 312 (29-9), and 316 (18-8 SMO).

This is one of many Cooper specialties that have proved so successful in sulphite mill services. Specialties founded on long experience. We have made stainless castings for the paper industry since 1928. Some of them are still in service.

THE COOPER ALLOY FOUNDRY CO.
145 Bloy Street, Hillside, New Jersey

THE *Cooper* ALLOY FOUNDRY CO.
STAINLESS—MONEL—NICKEL

THE *Only* ALLOY FOUNDRY WITH *All* THESE FACILITIES

- Laboratory control over raw materials and finished products.
- Dual foundry . . . both hand and machine molding.
- Electric arc and high-frequency-induction melting furnaces.
- Centrifugally-cast castings.
- Heat treating of Castings up to six feet.
- X-ray and Gamma-ray inspection.
- Precision Castings.
- Machine shop . . . specially equipped for finishing stainless steel.
- Improved cleaning . . . including Lustracast electrolytic finishing which leaves all surfaces bright.
- Castings furnished rough, polished or fully machined . . . one ounce to two tons.
- Development of special alloys to meet unusual requirements.
- Technical consulting service.

ARMY E NAVY

Chicago Is Pessimistic About Paper Supply

Some Reports Indicate Civilian Users Can Get But 50 Percent and Less In Most Grades of Paper — Discusses Resins Before Paper Group — Salesmen Plan Meetings For December — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 27, 1944—It is pretty difficult to convince the Chicago paper trade that civilian uses are amounting to about 65% of pre-war times. While the figures may indicate this is the case it seems obvious, from reports here, that civilian users are lucky to get 50% of most grades and as little as 25% in some instances. There is every reason to believe, according to local reports, that the situation is going to get worse before it gets better. Those who have developed their thinking to a fine point are pessimistically of the belief that the pulp situation will be bad for some time to come inasmuch as it takes time to develop pulp supplies and out of regard for the fact that pulp wood consumption has gone so far ahead of production. With these factors and others before them, Chicago analysts are figuring it will be almost a year, even after the War ends, before any appreciable kind of service can be given the civilian trade. Locally, all markets are extremely tight, moving with due caution for post-war relations as far as regular customers are concerned. The Chicago waste-paper drive, in which the school children participated, was a feature of last week's news with the Chicago schools breaking their former national collection record by many hundreds of tons.

Salesmen Plan Two Meetings

The western division of the Salesmen's Association of the Paper Industry has two exceptionally fine programs planned for the month of December, according to Pat Patterson, of the Flambeau Paper Company, vice president of the association. The first open session will be held at the Hotel Sherman on Monday noon, December 4, with Commander W. C. Eddy as the speaker. Commander Eddy is head of the Radio Naval Training program in this area and also has charge of the radar and television development here. Phil Howard, publisher of the American Paper Merchant, secured Commander Eddy as the speaker and will introduce him at the SAPEYE meeting. On December 18 Bishop W. C. Conkling, head of the Episcopalian Diocese here and chaplain of the Salesmen's Association of the Paper Industry, will give the annual Christmas message to members of the Association just as his predecessor, George Craig Stewart did for so many years. The SAPEYES will hold their annual Christmas party during Christmas week.

Freeman Discusses Melamine Resins

The Chicago Professional Paper Group held its second formal meeting of the fall season at the Chicago Bar Association dining rooms on the evening of Monday, November 20. Harry Weston of the Fritz Publications, newly elected head of the fast growing group, presided over an audience of more than one hundred members and guests. Harold Freeman, director of the field technical staff of the American Cyanamid Corporation, was the featured speaker of the evening, packing into one hour a most instructive and educational analysis of the "Uses of Melamine Resins for Improving the Dry and Wet Characteristics of Paper." A subject that might have been dull for some members of the Group was transformed into an analysis of this new development —still in the experimental stage—which is expected to develop better papers for printing users through a more expanded use of shorter fibers. Mr. Freeman thoroughly explored this new use of resins for bringing out wet strength and by experiment and careful treatment of technical details was able to adequately demonstrate why the industry as a whole is taking such a keen interest in a process which should aid materially in filling requirements for better printing papers in the post-war days to come.

The Group meets monthly and is expected to get together in December though no announcement has yet been made with reference to either the time or subject of the next program. During 1945 the Group, under the direction of Mr. Weston, is expected to make itself one of the leading forces for a better understanding of the ramifications of the industry within the industry itself.

Elliott Comes to Chicago Office

The Chicago sales office staff of the Port Huron Sulphite & Paper Company has been added to in the person of Charles T. Elliott, Jr., who has for some time been with the company at its Rochester, N. Y. offices. Port Huron offices here are at 400 West Madison street, the Daily News Building.

Irving McHenry Elected Director

Irving McHenry, Mid-States Gummed Paper Company has been elected a director of the Gummed Industries Association which held one of its most successful conferences at Cleveland, Ohio, last week. Mr. McHenry is one of the most widely and favorably known paper trade leaders in this area. A feature of the annual convention was the adoption of a three year advertising and educational campaign to educate users as to the best use of gummed papers.

Pejepscot Makes Interesting Display

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 27, 1944—The Pejepscot Paper Company, of Brunswick, Me., has an attractive and interesting display in the Maine window in the lobby of the North Station for the month of December. It was the endeavor of the company to show papers, manufactured at the plant, that will interest civilian users.

To Be Chief of Forest Products Section

[FROM OUR REGULAR CORRESPONDENT]

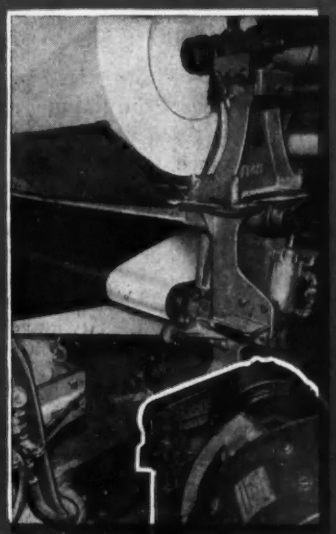
WASHINGTON, D. C., November 15, 1944—Designation of William T. Phillips as chief of the section having jurisdiction over forest products in the newly-established commodities division of the State Department has been announced.

This division is setting up units for virtually all major commodity groups.

A BREAK

the threading period. Independent of the width or strength of the web, it adjusts the speed of the winder motor to that of the supercalender drive. Tension on the "tail" is never too great. The operation is brought up to speed *quickly*, yet without a break!

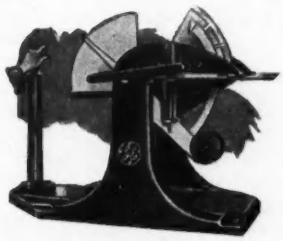
Dozens of other paper-mill drive control problems are being met *in new ways* out of G.E.'s unique combination of experience in (1) electronic and amplidyne control (2) paper-mill electrification. Better check your modernization plans with our application engineers. *General Electric Company, Schenectady 5, N. Y.*



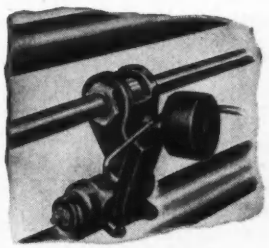
During threading of the supercalender (above), the speed of the winder is matched with that of the supercalender by amplidyne control of the winder drive (see inset)

FOUR G-E TESTERS

TO HELP YOU STEP UP PAPER QUALITY

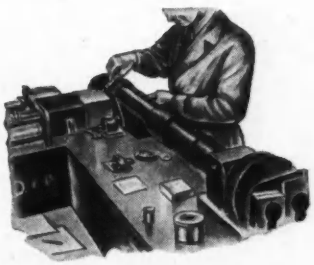


PUNCTURE TESTER
This tester measures the resistance to both puncture and bending of fibreboard, wallboard, corrugated board, plywood, and other container materials. The method, involving the puncture of material by a metal point on the end of a pendulum arm, has recently been adopted as a tentative standard by ASTM. (Bulletin GEA-4168 gives details.)



ELECTROLIMIT PAPER GAGE
Paper thicknesses from .003 inch to .030 inch can be checked continuously as paper of varying thickness passes over a calender roll. Paper thickness is controlled to precise limits. *(Refer inquiries to Pratt & Whitney, Div., Niles-Bement-Pond Co., West Hartford, Conn., which builds and sells this gage incorporating G-E electric parts.)*

G-E REFLECTION METER
This instrument measures the spectral reflection characteristics of paper according to the testing specifications of the Institute of Paper Chemistry, special calibration and standards being furnished by the Institute. High sensitivity permits measurement to 1/10 of 1 per cent on samples having reflection values of 50 per cent or more. (Bulletin GEA-8853 gives full information.)



RECORDING PHOTOELECTRIC SPECTROPHOTOMETER
With this device, colors can be matched and color standards established on a scientific basis, completely independent of eye judgment. It draws a spectrophotometric curve for any sample in five minutes or less, defining the color characteristics over the entire visible spectrum. Samples so matched will be identical under any light source. (Bulletin GEA3680)

GENERAL ELECTRIC

668-14-187

Buy all the BONDS you can — *and keep all you buy*

Advises Canada to Make Trade Agreements

President Vining of Newsprint Association In Public Address Urges International Negotiations To Sustain Pulp and Paper Industry In Post-War Period—To Reduce 1945 Pulp Exports To United States.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 27, 1944—A suggestion which has an important bearing on the future of the pulp and paper industry has been put forth in a public address here by Charles Vining, president of the Newsprint Association of Canada and chairman of the Joint Executive Board of the Canadian Pulp and Paper Association and the Newsprint Association. It is that Canada should undertake the negotiation of trade agreements with other countries to assure stability of supply and distribution for Canadian pulp and paper products. He pointed out that in the years immediately preceding the war trade agreements of this nature were made between a number of countries covering coffee and sugar, and quite recently similar agreements have been, or are being, developd for the effective handling of oil and cotton. All these agreements, both before the war and in recent months, have involved the Government of the United States and some have involved the British Government of Great Britain.

"It may be," said Mr. Vining, "that, without losing the vitality of free enterprise, Canada can find in agreements of this kind a pattern to fit her legitimate interests in the marketing of her main commodities and to suit the interest of her customers in stability of supply. Certainly no person would deny that, to Canada, pulp and paper are fully as important as coffee, sugar, oil and cotton may be to other countries although Canada herself has seemed curiously unaware of this significance in comparison with the enterprising interest which some other countries have shown in their main commodities."

Hearst Papers Pay on Old Debt

Just at a time when most newsprint companies are doing particularly well due to the abnormal conditions which have developed out of the war, several of them have come into a nice windfall in the form of a substantial payment owed to them by the Hearst newspaper organization. A few years back, when the Hearst papers got into trouble, it was found that they owed different Canadian newsprint companies over $8,500,000, and a compromise had to be effected in regard to provision for the payment of this money, with the first payment on arrears tentatively set for 1945. In the interval conditions have greatly improved for the newspaper chain, and the companies to which there was an outstanding indebtedness were recently notified that it would be possible to anticipate a payment due next year, and that an amount of $2,000,000 would be distributed pro rata among the Canadian companies.

Reduction in Pulp Exports to U. S.

The Prices Board, in a statement resulting from a joint meeting of United States and Canadian administrations responsible for pulpwood, pulp and newsprint supplies, states that pulp exports to the United States during the first six months of 1945 will be at the annual rate of 1,000,000 tons, a reduction of 100,000 tons as compared with the rate for the current year. This, it says, resulted from "the necessity, recognized by all concerned, that Canada supply additional quantities of pulp urgently needed by Great Britain and other Allied countries." It added: "Shortages of wood at the mills have also contributed to this reduction, but these shortages have been partly offset by extraordinary efforts of the Canadian newsprint industry to produce additional quantities of pulp. Reduction in pulp supplied to the United States may require some domestic adjustments by the War Production Board."

While the pulpwood supply at Canadian mills is reported to be still "very tight," wood production in the woods at the present time is encouraging and if this continues an over-all improvement in Canadian production of approximately five per cent is anticipated during the second half of 1945.

Will Maintain Newsprint Shipments

The Prices Board also announced that deliveries of newsprint to the United States during the first six months of 1945 will be maintained at the same rate as in 1944, namely 200,000 tons a month.

More Newsprint to Overseas

An improved shipping position continues to find reflection in an increased movement of Canadian newsprint to overseas markets. In October a total of 35,801 tons went to overseas customers, equivalent to 13.6 per cent of total shipments of 262,998 tons. Assuming a November-December movement on much the same basis, overseas shipments for 1944 might be estimated at approximately 400,000 tons, as compared with 266,807 tons in 1943. In Newfoundland's case, overseas exports of newsprint for the elapsed ten months of this year totalled 143,358 tons, or 11,500 tons more than for all of 1943.

Port Royal Resumes Production

The Port Royal Pulp and Paper Company Limited at St. John, N. B., has resumed operations after having been closed for a month due to water shortage. It was found necessary to close the mill on October 17 because of the low level of the water in Spruce Lake, which supplies water for domestic purposes in West St. John, as well as for the operation of the company's pulp mill. The lake's level has gone up three feet since then; consequently the city authorities have given permission for the mill to resume operations.

Carter, Rice & Co. Hold Sales Dinner

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 27, 1944—A successful sales meeting of Carter Rice & Co., Corp., began with a dinner at the Parker House Friday evening, continuing with a session Saturday morning, and closing with a luncheon at noon. J. R. Halkyard, assistant general manager, had charge of arrangements. Salesmen attending included representatives from New York City and Springfield, Mass.

IN YOUR
BLEACHING AND
CHLORINATING
OPERATIONS
use
DIAMOND
Liquid Chlorine
there's no greater value!
LOOK TO DIAMOND FOR
EXPERIENCE
DEPENDABILITY
RESEARCH

Lake States Discusses Paper Machines

The Lake States Section of the Technical Association of the Pulp and Paper Industry met on Tuesday, November 14th at 6:30 P.M. at the Conway Hotel in Appleton. The speaker scheduled for this meeting was J. E. Goodwillie of the Beloit Iron Works Company who was to talk on "Trends in Paper Machine Design." As Mr. Goodwillie was called to the West Coast on a business trip just prior to our meeting, it was impossible for him to carry out the original plan. However, the same subject was presented by H. C. Moore of the Beloit Iron Works Company. Mr. Moore mentioned two very broad significant trends which are apparent in modern machine design. The first is to build machines which will make a better product and make it faster. The second is a trend toward specialization which means that a given paper machine is designed more and more to make a specific type of paper.

Mr. Moore then discussed in some detail the various component parts of the paper machine, describing the requirements for improved equipment and suggesting how these requirements are met at the present time by machine builders such as the Beloit Iron Works Company. Specific points which were discussed included the suction primary couch, the press section, reels and paper machine drives. Mr. Moore stated that the post-war policy of this company was first to modernize existing equipment and second to replace old equipment with new equipment where replacement is necessary.

Those present included: Robert P. Anderson, Francis J. Allard, P. K. Baird, Arnold Beaman, Paul Boronow, Rudolf Brose, R. G. Carson, T. L. Christensen, W. C. Christensen, H. A. Chuse, R. L. Coddington, Art Coffin, T. Collins, Henry J. Desotell, H. P. Dixson, D. J. Dughie, R. T. Elias, G. F. Enderlein, Wm. A. Fannon, Roman Foegen, L. V. Forman, H. V. Frederick, John P. Gerhauser, W. B. Giese, John Graff, H. H. Haldeman, Miles J. Hanna, John A. Hanson, Charles Hebenstreit, E. C. Horh, F. A. Janson, Walter Johnson, Peter E. Jones, Arthur Kaplan, William S. Kennedy, M. J. Kershasky, Ralph M. Kingsbury, F. X. Kreiling, Jr., Jas. J. Kryszak, Milton A. Lefevre, Elmer F. Lem, Edward J. Lindberg, George E. Mackin, N. L. Malcove, Clarence E. Marchant, A. E. May, W. M. McGraw, R. W. Meyer, L. A. Moss, Thos. E. Orbison, F. G. Pavlick, M. W. Phelps, T. Richard Probst, W. B. Pusey, Thomas E. Quick, R. M. Radsch, George H. Saucier, Robert J. Seidl, W. L. Shaw, Harold W. Sherman, John Sinclair, Gust A. Smedlund, L. E. Smith, Thos. J. Stafford, Joseph Stanley, R. A. Stillings, M. J. Taylor, Gordon R. Thomason, J. E. Todd, Tony Van De Laarschat, Cornelius Van Den Boom, Harold Vanderhei, Ervin J. Vickman, Edward J. Walk, J. D. Wells, S. D. Wells, Agart Wiberg and E. J. Wefar.

Pacific Section TAPPI Meets at Camas

The first dinner meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry for the 1944-45 season was held at Nora Self Hall, Camas, Wash., November 14th at 6:30 P.M. Arrangements for the meeting were ably carried out by W. F. Holzer and R. G. Jaffe of the Central Technical Department, Crown Zellerbach Corporation. Good food and excellent service have become traditional at the Camas meeting.

The technical program was arranged by H. W. Bialkowsky, Vice Chairman of the Pacific Section with Erik Ekholm, Chairman, presiding. W. B. Van Arsdel of the U. S. Department of Agriculture Regional Laboratory at Albany, Cal., delivered an interesting paper on the work of the Regional Laboratories throughout the country. He discussed in detail the program at the Albany Laboratory and particularly the projects which are of interest to the pulp and paper industry. William Pittam, Weyerhaeuser Timber Co., Pulp Division, Longview, Wash., presented a paper in competition for the Shibley Award, offered annually by the Pacific Section. Mr. Pittam's paper was entitled "The Extraction of Tannin from Waste Western Hemlock Bark," and described the work which has been done at the Weyerhaeuser Everett mill on the utilization of waste hemlock bark. An interesting discussion of the economic possibilities of tannin extraction followed Mr. Pittam's paper. The meeting closed with a film "Timber to Tokyo" produced by the U. S. War Department.

Those present included: C. E. Ackley, D. L. Anderson, George D. Bailey, Wm. R. Barber, E. R. Barrett, Harold W. Bialkowsky, Carl E. Braun, James B. Brown, H. E. Burdon, G. W. Charters, R. E. Chase, William W. Clarke, William M. Clines, J. V. B. Cox, Arthur Dammann, H. N. Danielsen, R. D. Day, T. E. Dear, R. E. Draper, Paul M. Dunn, John DuPuis, G. C. Eck, E. Ekholm, Joel Edwards, A. E. Erickson, E. O. Ericsson, Ed Escher, Carl Fahlstrom, W. L. Failing, Chester A. Fee, Donald G. Felthous, F. J. Fitzpatrick, Milton J. Franklon, Leo Friedman, G. H. Gallaway, Irving R. Gard, Harry W. Glenn, Russell Graff, T. H. Grant, Earl G. Hallonquist, R. N. Hammond, J. E. Hanny, John F. Hart, Harald Hauff, Jan Haugerod, W. H. Haverman, S. E. Hazelquist, H. F. Hoehne, W. F. Holzer, James H. Hull, W. F. Hynes, W. C. Jacoby, R. G. Jaffe, W. H. Kasch, W. N. Kelly, Ernie Kertz, Glen D. King, Donald Knapp, Lauren A. Lafond, N. A. Lewthwaite, Gus Lorenz, E. W. Lozier, A. H. Lundberg, B. T. McBain, J. H. McCarthy, L. D. McGlothlin, Milton J. Maguire, R. V. Maier, W. C. Marshall, Robert W. Martig, Otto F. Michaelis, C. W. Morden, R. A. Murray, A. G. Natwick, Ben E. Natwick, T. J. Nelson, A. Newcomb, E. H. Nunn, James Osborne, Gus Ostenson, E. V. Partlow, Jim Peake, L. W. Pingree, Wm. Pittam, J. C. Plankinton, W. H. Rambo, H. H. Richmond, E. J. Roake, Jack V. Savage, Leon E. Semke, Burl R. Shanks, Robert Shearer, Wm. J. Shelton, Dalton L. Shinn, D. L. Shirley, A. P. Siebers, R. T. Smith, Ray Smythe, Gus A. Sporre, C. F. Stevey, Albert W. Stout, J. P. Strasser, R. E. Strommer, George R. Succar, Virgil M. Sutherling, G. Eugene Tower, R. M. True, W. B. Van Arsdel, Harold C. Wall, L. H. Wear, Jack W. Weiblen, Fred J. Weleber, W. A. Wenzel, E. N. Wennberg, R. S. Wertheimer, Rex West, O. C. Wheeler, Jack Wilcox, Peter M. Wilkie, D. D. Wilma, Zina A. Wise, Herb Wymore, Eugene V. Young and J. G. Ziegler.

To Be Director of Ross Industries

Allen R. Cobb, vice president of the Irving Trust Company of New York has been elected to the board of directors of Ross Industries Corporation of New Brunswick, N. J. whose fully owned subsidiaries are the J. O. Ross Engineering Corporation of New York, Chicago, Detroit, Boston and Ross Engineering of Canada Ltd. of Montreal.

Favors Early Lifting of Paper Curbs

Reduced controls over pulp and paper, through revocation of certain conservation and limitation orders and modification of others, are considered necessary after "Victory in Europe" Day by the Over-all Paper Industry Advisory Committee, the War Production Board announced recently. Certain controls are essential if the industry is to meet war needs and carry out its obligation to provide ready employment as additional men become available, the committee said.

The committee adopted the report of a task group that expressed the belief that after "V-E" Day there may be a lessening of military demands for pulp and paper and that the demand now placed on United States mills may be reduced as more of the world's supply is made available to the Allies. With continued production for war and maximum employment in mind, and assuming that the supply and demand factors are sufficiently favorable, the committee recommended that the following actions be taken after "V-E" Day:

That, as soon as a reduced military demand assures an adequate supply of chlorine, Order L-11, which limits the brightness of pulp and paper, be revoked and Order M-19, which restricts the amount of chlorine used for bleaching, be suspended.

That pulp allocation by segments be discontinued and allocation for manufacture of specific grades of paper, both under the pulp allocation order, M-93, be discontinued except as required to meet military paper requirements.

That withholding of pulp from integrated mills be reduced as quickly as war demands are curtailed and that the percentage of pulp withheld be at the ratio of war demands to total pulp production. Under this procedure, white pulp and kraft pulp would be treated separately.

That allocation of market pulp revert to use and inventory control as soon as possible.

That M-93 be revoked as soon as a 25-day inventory of market pulp, based on October 1942 consumption, is available to converting mills. Such pulp would include that in the hands of market pulp producers, in transit, on dock, and in the hands of converting mills.

That a further study be made of L-120, the paper simplification and standardization order, with a view to recommending the removal of all provisions that do not now contribute to the prosecution of the war. Such parts of the order as affect basis weights, etc., should be continued as conservation measures but should be eliminated when M-93 is rescinded.

That Orders L-209, controlling wire cloth used in the manufacture of pulp, paper and paper board, and L-83, controlling paper mill machinery, both of which affect the paper and paper board industry, should be revoked.

That M-251, which provides for the allocation and control of pulpwood in critical shortage areas, be studied to determine whether it is now a deterrent to the industry, and, if so, revoked.

That M-241, the paper and paper board conservation order, be continued in effect only so long as it is necessary to insure the production of papers required for the Government and that, when the need for directives is passed, it be rescinded as quickly as possible. In the meantime, it was recommended that as the need for Government withholdings and directives is reduced, the reserve percentage now placed upon the industry be reduced.

That other orders involving consumption quotas be relaxed proportionately as the percentage of reserve under the paper and paper board conservation order M-241 is reduced.

Plan Canadian Pulp Exports For 1945

WASHINGTON, D. C., November 27, 1944—A program for exports of pulpwood, pulp and newsprint from Canada to the United States during the first six months of 1945 was announced today by the War Production Board following a meeting of U. S. and Canadian officials.

Concerning the program, WPB officials made the following statement:

During the first half of 1945, Canadian deliveries of newsprint to the United States will be maintained at the same rate as in 1944, and pulp deliveries will be reduced slightly. This will mean deliveries of newsprint of 200,000 tons per month from Canada to the United States. During the first half of the year, Canadian pulp exports to the United States will be at the annual rate of 1,000,000 tons. This figure compares with exports in 1944 of 1,100,000 tons. The reduction has resulted from the necessity recognized by all concerned that Canada supply additional quantities of pulp which is urgently needed by Great Britain and other Allied countries. Shortages of wood at the mills have also contributed to this reduction. These shortages have been partly offset by extraordinary efforts of the Canadian newsprint industry to produce additional quantities of pulp.

Pulpwood exports during 1945 will be a minimum of 1,250,000 cords, subject to upward adjustment in accordance with the agreement that has operated for more than a year for an equal sharing between the two countries of total Canadian production of "purchased" pulpwood.

During the wood-driving season in 1944, shortage of water in the streams reduced the deliveries of pulpwood to Canadian mills below the volume that had been anticipated. The drought continued through the fall, This has created a very "tight" wood supply situation during the first half of 1945. Reports of wood production in the Canadian woods during the current cutting season are encouraging, and it is hoped that some improvement in deliveries of pulpwood to Canadian mills may be possible during the second half of 1945, sufficient to allow an overall improvement in Canadian production of approximately 5% thereafter. Any such improvement is subject to the hazards of weather during the cutting season, difficulties of stream driving during the summer months and other physical factors.

Wrapping Div. Meets at Philadelphia

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., November 27, 1944—Members of the Wrapping Paper Division of the Philadelphia Paper Trade Association met at noon, November 15, at the Downtown Club for another of their regular meetings.

A representative of the National Paper Trade Association staff was on hand to further analyze the implications of the Amendment to M-241 which was of considerable interest to those present. Other current topics were also covered.

The firm of Dushoff Paper and Box Company was welcomed to the meeting as a new member of the group, and plans for additional members and increased activity were discussed.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending November 25, 1944

STOCKS

	High	Low	Last
A. P. W.	3½	3½	3½
Armstrong Cork Co.	42¾	42⅜	42¾
Celotex Corp.	14	12⅞	14
Celotex Corp., pf.	18¾	18	18¾
Certain-Teed Products Corp.	7⅝	7	7⅛
Certain-Teed Products Corp., pf.	134	127	129¼
Champion Paper & Fibre Co.	30	28½	30
Champion Paper & Fibre Co., pf.	114	114	114
Congoleum Nairn Co.	25⅛	24¾	25⅛
Container Corp. of America	27¾	27	27½
Continental-Diamond Fibre Co.	10⅞	10¾	10¾
Crown-Zellerbach Co.	20⅞	20½	20½
Crown-Zellerbach Co., pf.	103¾	103½	103½
Dixie Cup Co.	17¾	17¾	17¾
Dixie Cup Co.—A	49	48½	48½
Flintkote Co.	22⅜	21⅜	22¼
Flintkote Co., pf.	109	109	109
Robert Gair	4⅜	4¼	4⅜
Robert Gair, pf.	15⅝	15⅝	15⅝
International Paper Co.	18⅞	18½	18⅞
International Paper Co., pf.	90	88	89¾
Johns-Manville Corp.	97¼	96	96¾
Johns-Manville Corp., pf.	..	..	..
Kimberly-Clark Corp.	37½	36½	37½
Mac Andrews & Forbes	29	28⅞	29
Mac Andrews & Forbes, pf.	..	..	..
Masonite Corp.	41½	40	40¾
Mead Corp.	11½	11⅜	11¼
Mead Corp., pf. A-6%	100	100	100
Mead Corp. pf. B-5½%	94	94	94
National Container Corp.	11⅜	11	11⅜
Paraffine Companies, Inc.	58	58	58
Paraffine Companies, Inc., pf.	108¼	108¼	108¼
Rayonier, Inc.	15¾	15¾	15½
Rayonier, Inc., pf.	33⅝	33½	33½
Ruberoid Co.	32½	32½	32½
Scott Paper Co.	44½	44½	44½
Scott Paper Co., pf.	110	110	110
Sutherland Paper Co.	30¼	30¼	30¼
Union Bag & Paper Corp.	14¼	13¾	14
United Paperboard Co.	..	..	..
U. S. Gypsum Co.	77½	75¼	76
U. S. Gypsum Co., pf.	..	..	..
West Virginia Pulp & Paper Co.	24⅛	23⅝	23⅞
West Virginia Pulp & Paper Co., pf.	109	109	109

BONDS

Abitibi Pulp & Paper Co. 5s '53	98¾	92⅝	98⅜
Celotex Corp. 3¾s '55	..	..	..
Certain-Teed Products Corp. 5½s '48	102¼	102	102
Champion Paper & Fibre Co. 4¾s '50	..	..	..
International Paper Co. 6s '55	107¾	107¼	107¾
International Paper Co. 5s '47	103½	103½	103½
Mead Corp. 3½s '53	..	..	..
West Virginia Pulp & Paper Co. 3s '54	..	..	..

New York Curb Exchange

High, Low and Last for Week Ending November 25, 1944

STOCKS

	High	Low	Last
Great Northern Paper Co.	35⅞	35½	35¾
Hummel-Ross Fibre Corp.	7⅛	7	7
St. Regis Paper Co.	5⅝	5¼	5⅜
St. Regis Paper Co., pf.	..	..	..
Taggart Corp.	..	..	..

BONDS

American Writing Paper Co. 6s '61	101⅜	101⅜	101⅜

Puget Sound Nets 87 Cents

Puget Sound Pulp and Timber Company reports a net profit of $336,554 from operations in the first nine months of 1944, after providing $492,746 for Federal taxes. This result compares with $339,735 net profit, after $446,379 for Federal taxes, in the first nine months of 1943. Net per common share amounts to 87.5 cents for the 1944 period, in comparison with 88.5 cents in the 1943 period.

Pulp production totaled 75,694 tons in the first nine months of 1944, in comparison with 73,865 tons in the like period of 1943. Net sales and other revenue amounted to $4,863,270 in the first nine months of 1944, against $4,536,316 in that part of 1943. Operating profit before tax provisions was $829,300 in the first nine months of 1944, compared with $786,114 in that period of 1943. These figures for 1944 do not reflect the results of sale of Canadian timber interests earlier this year. In this transaction, profit before capital gains tax amounted to $2,340,540.

I. P. Nets $2,114,376

Richard J. Cullen, chairman of the corporation, in submitting a statement of consolidated profits and loss of the International Paper Company and subsidiaries for the quarter ending September 30, together with a statement for the corresponding period of 1943, says:—

"Net profit for the third quarter of 1944 amounted to $2,114,376 compared with $2,279,273 for the third quarter of 1943. For the first nine months of 1944 net profit amounted to $6,548,626 compared with net profit of $6,622,474 for the first nine months of 1943.

"The company's liabilities for U. S. taxes based on income has been recalculated and adjustments have been made representing an increase of $492,977 in net profit previously reported for the first six months of 1944."

The statement of consolidated profit and loss follows:

	Three Months Ended September 30,1944	Three Months Ended September 30,1943
SALES AND OTHER INCOME:		
Gross sales, less returns, allowances and discounts	$59,564,501.49	$54,618,446.21
Other income—net	1,366,751.39	1,095,360.32
	$60,931,252.88	$55,713,806.53
COST AND EXPENSES:		
Cost of sales:		
Pulpwood, labor, materials, etc.	$37,021,604.72	$32,514,611.04
Maintenance and repairs	3,583,914.92	2,781,327.34
Taxes (other than income taxes)	999,349.47	907,753.79
Outward freight and delivery expenses	5,400,643.29	5,368,635.37
Selling, general and administrative expenses	1,760,900.26	1,677,986.92
Provision for doubtful accounts	.....	29,870.65
	48,766,412.66	43,280,185.11
	$12,164,840.22	$12,433,621.42
DEDUCTIONS:		
Interest on funded debt	$ 598,670.01	$ 635,824.41
Interest on other debt	3,734.96	5,530.20
Amortization of debt discount and expense	52,489.20	55,439.73
Depreciation	2,977,154.58	2,947,969.01
Depletion	232,202.09	262,491.92
Dividend on preferred stock of subsidiary	1,712.50	1,712.50
	3,865,963.34	3,908,967.77
	$ 8,298,876.88	$ 8,524,653.65
Less: Provision for Taxes Based on Income:		
U. S. Federal taxes		
Normal	$ 987,051.00	$ 1,080,644.00
Excess profits (net)	4,457,000.00	4,695,958.00
State taxes	133,992.00	117,154.00
Canadian and other foreign taxes	434,414.01	300,874.93
	6,012,457.01	6,194,630.93
	$ 2,286,419.87	$ 2,330,022.72
ADD: Post-War Excess Profits Tax Credit:		
U. S. Federal	$ 476,439.00	$ 469,597.00
Less: Credit for debt retirement applied to reduce excess profits tax above	307,401.00	.....
	$ 169,038.00	$ 469,597.00
Canadian	46,038.03	2,378.45
	215,076.03	471,975.45
	$ 2,501,495.90	$ 2,801,998.17
Less: Earnings of foreign subsidiaries before interest on obligations held by International Paper Company—transferred to Reserves	387,119.37	522,724.43
NET PROFIT	$ 2,114,376.53	$ 2,279,273.74

The above figures are subject to audit and final adjustment at December 31st (end of fiscal year).

The 1943 figures do not reflect provision made at the year end for estimated effect of renegotiation.

Buys Mechanic Falls Mill

The mill in Mechanic Falls, Maine, formerly operated by Waterfalls Paper Mills has been purchased by Pond's Extract Company of New York.

National Container Nets $1.39

The National Container Corporation reports:

Net profits, after all charges including estimated Federal normal, surtax and excess profits taxes totaled $921,891.61, or $1.39 per share for the period January 1 to September 30, 1944, on 660,964 shares of $1 par common stock outstanding, compared with $584,986.36 for similar period in 1943, or 89 cents per share.

The net profit after all charges including federal estimated normal, surtax and excess profits taxes totaled $332,926.24, or 50 cents per share for the period July 1 to September 30, 1944 on 660,964 shares of $1 per common stock outstanding, compared with $223,360.67, or 34 cents per share for similar period in 1943.

For purposes of comparison, earnings per share are based on 660,964 shares of $1 per common stock presently outstanding.

Consolidated net sales of National Container Corporation and its subsidiaries for the period January 1 to September 30, 1944, amounted to $13,174,501.75, compared with $9,363,071.82 for similar period in 1943.

Wausau Paper Mills Co. Elects Officers

At the annual meeting of Wausau Paper Mills Company held at Wausau, Wis., November 9, the following officers were elected: chairman of the board, J. S. Alexander, Wausau; President, Harold C. Collins, Wausau; Vice President, L. W. Holbrook, Washington, D. C.; Secretary, Aytch P. Woodson, Wausau; Treasurer, D. C. Everest, Wausau; Vice President in Charge of Production, Carl Magnus, Wausau; Vice President in Charge of Sales, Harold R. Knott, Chicago; Assistant Secretary and Assistant Treasurer, Glen Stevens, Wausau.

The board of directors elected were: Chairman, J. S. Alexander, Harold C. Collins, L. W. Holbrook, A. P. Woodson, D. C. Everest, Carl Magnus, Paul Hoeper.

The executive committee is composed of: Chairman, Harold C. Collins; Vice Chairman, J. S. Alexander; Secretary, A. P. Woodson, D. C. Everest.

Great Northern Profits Off

The Great Northern Paper Company, three months ended September 30, net income $369,082, after taxes and charges, equal to 37 cents a share on 997,480 common share; year ago $549,792 and 55 cents a share; nine months' net income $1,310,951 and $1.31 a share; year ago $1,200,585 and $1.20 a share.

Gaylord Earns $1.06

The Gaylord Container Corporation and Subsidiary —Nine months: Net profit, $764,237, or $1.06 a common share, against $775,395, or $1.07 a share, last year. September quarter: Net profit, $241,617, or 33 cents a common share, against $277,870, or 39 cents a common share, for third quarter of 1943.

Sutherland Votes Dividend

An extra dividend of 15 cents and the regular quarterly dividend of 30 cents on the common stock were authorized by the Sutherland Paper Company, payable December 15. The current dividends bring payments for the year to $1.35.

8
INDUSTRIAL
AUCTIONS

2 PLANTS of former WINMAR FIBRE CO.

WINONA, MINN. 27 acres—17,400 sq. ft. floor space, R. R. Siding. **Mon. Dec. 11**
10:30 On Premises.
MACHINERY & EQUIPMENT SOLD SEPARATELY

WILLMAR, MINN. 8 acres—4,400 sq. ft. floor space, R. R. Siding. **Wed. Dec. 13**
1 P.M. On Premises.
MACHINERY & EQUIPMENT SOLD SEPARATELY

5 PLANTS, AND 1 INDUSTRIAL SITE ordered sold by
CONTINENTAL CAN COMPANY

KANSAS CITY, MO. 47,700 sq. ft. land—155,000 sq. ft. floor area, sprinklered, R. R. siding.
Friday, Dec. 15
1 P.M. On Premises.

ST. LOUIS, (Jennings) MO. 7 acres of vacant industrial land. W. Florissant Ave. near Goodfellow Blvd.
Sale Sat. Dec. 16
11 A.M. DeSoto Hotel, St. Louis.

BEDFORD, VA 2½ acres—83,000 sq. ft. floor area, sprinklered, R. R. Siding.
Tues. Dec. 19
1 P.M. On Premises.

WHEELING (WARWOOD), W. VA. 178,000 sq. ft. floor space—4.7 Acres, sprinklered, R. R. Sidings.
Wed. Dec. 20
1 P.M. Hotel Windsor, Wheeling.

WHEELING, W. VA. 2.83 acres — 153,000 sq. ft. floor space, sprinklered, R. R. Siding.
Wed. Dec. 20
1 P.M. Hotel Windsor, Wheeling.

WILKES BARRE, PA. 110,309 sq. ft. land—97,000 sq. ft. floor area, sprinklered, R. R. Siding.
Friday, Dec. 22
2:30 P.M. Hotel Sterling, Wilkes Barre.

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Stephen A. McDonald, Auctioneer
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Packaging Institute Meets

The sixth annual meeting of Packaging Institute, Inc., held at the New Yorker Hotel, New York City, on November 1 and 2, elected the following officers and directors:

President—Walton D. Lynch, vice president, National Folding Box Company, New Haven, Conn., succeeding Joel Y. Lund, vice president, Lambert Pharmacal Company, St. Louis, Mo.

Vice Presidents: W. O. Brewer, manager, Pharmaceutical Sales, Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J., and George A. Mohlman, president, Package Machinery Company, Springfield, Mass.

Division Chairmen: Production Division, W. O. Brewer; Machinery Division, Frank B. Fairbanks, president, Horix Manufacturing Company, Pittsburgh, Pa.; Supplies Division, F. S. Leinbach, Riegel Paper Corporation, New York.

Each Division elected two new directors as follows:

Production Division: Lloyd I. Volckening, president, Ivers-Lee Company, Newark, N. J., Dr. J. H. Wallace, Jr., vice president, Carter Products Company, New Brunswick, N. J.; Machinery Division: Harry A. Miller, secretary and general manager, Burt Machine Company, Baltimore, Md., Oscar W. Wikstrom, president U. S. Automatic Box Machinery Company, Boston, Mass.; Supplies Division: John S. Algeo, vice president, Hazel-Atlas Glass Company, Wheeling, W. Va., M. T. Rogers, manager, Packaging Division, Dewey & Almy Chemical Company, Cambridge, Mass.

Nine hundred executives from all branches of the packaging industries attended the two-day conference sessions of the Institute.

The chairman of the conference program was F. S. Leinbach, Riegel Paper Corporation.

N. E. Paper Men Donate Christmas Cards

BOSTON, Mass., November 13, 1944—The New England Paper Merchants Association, Inc., was requested by the Red Cross to contribute printed cards for the use of the Blood Donor Center as an incentive to increase the number of donors. A committee composed of Samuel L. Ginsburg, Ginsburg Brothers, Inc., Somerville, Mass.; James J. Dwyer, Stone & Forsyth Company, Boston, and William H. Walpole, Rutter & McNaught, Inc., Boston, completed arrangements for the association to cooperate in this patriotic appeal. Eighty thousand cards were printed, the cost of which is being borne by members of the association in Metropolitan Boston.

The cards, bearing a Red Cross, top center, and representations of holly, say: "Merry Christmas to You! My most important Christmas gift this year was sent with Happy Christmas Wishes for you. I hope you may never get this gift, but I want it to be over there if you or any of your buddies ever need it. It was a pint of my blood, donated to the American Red Cross Blood Donor Service of Boston.

R. Spitzer Joins Paper Co.

BOSTON, Mass., November 20, 1944—Richard Spitzer has joined the sales organization of the Chas. A. Esty Paper Company, Worcester, Mass. For a number of years he has been associated with Carter Rice & Co., Corp. in its Boston store. Mr. Spitzer will be an outside salesman, covering the Worcester territory.

Newspapers Use Less Paper

Newspapers have reduced their consumption of newsprint paper as compared with the same month of the previous year for the fifteenth consecutive month.

Daily newspapers reporting to the American Newspaper Publishers Association consumed 218,137 tons of newsprint paper in October 1944 compared with 235,511 tons in 1943 and 262,488 tons in 1941. This was a decrease in October 1944 under October 1943 of 7.4% and a decrease under October 1941 of 16.9%. The year 1941 is the base for calculating allowable use by newspapers.

The total estimated newsprint consumption in the United States for October 1944 was 300,879 tons which includes all kinds of uses of newsprint paper. For the first ten months of 1944, it was estimated to be 2,666,996 tons. The ANPA is now using 72½% instead of 75% as more accurately representing the part which newsprint consumption of the ANPA reporting group bears to the estimated consumption total of 100% by all users. For users besides newspapers 27½% is added to bring the estimated newsprint consumption total up to 100%.

During the first ten months of 1944 the reporting newspapers used 1,933,572 tons of newsprint, a decrease of 15.2% under the first ten months of 1943, and a decrease of 19.7% under the first ten months of 1941.

The stocks of newsprint paper on hand with newspapers reporting to the ANPA was 54 days' supply at the end of October 1944 which was a decrease of 9 days' supply from 63 days on hand at the end of September 1944.

United Paperboard Gets Desist Order

WASHINGTON, D. C., November 29, 1944—United Paperboard Company, 285 Madison avenue, New York, manufacturing and distributing pulpboard, has stipulated with the Federal Trade Commission to cease and desist from certain misrepresentations of its products. According to the stipulation, a thin cardboard composed of 40% cedar pulp and 60% paper, impregnated with cedar oil and with imitation cedar graining printed thereon to simulate real cedar wood, has been designated and invoiced by it as "Cedarboard" and "Cedar Board," thereby placing in the hands of others the means to misrepresent to purchasers that such material is composed wholly of genuine cedar.

The respondent agrees that in its brands, labels, trade literature, invoices or otherwise it will cease designating or describing as "Cedarboard" or "Cedar Board," or by words of similar import, any product not made wholly of cedar material. If the product is composed in substantial part of cedar and in part of other materials, and the word "Cedar" is used to describe the cedar content only, then the company also agrees that whenever the word "Cedar" appears it shall be immediately accompanied by words in type of equal size and prominence clearly indicating that the product does not consist wholly of cedar.

Goes With Hammermill Paper Co.

Walter G. Hendrich, formerly technical director and plant manager of Byron Weston Company and recently with the Office of Strategic Services, has joined the Research Staff of Hammermill Paper Company, Erie, Pa.

CONGRESSIONAL COMMITTEE OPENS PAPER BIDS

(Continued from page 7)

cut 32½x42½ and 38x48½ ins., the grain as ordered. Min. order, one color, 10,000 lbs

Cauthorne Paper Co. 8.35c

25 Per Cent Mimeograph

No. 47—200,000 lbs., No. 36; flat, cut 32½x42½; 34½x44, and 38x48½ ins.; the grain to run as ordered.

D. L. Ward Co. 12.79c
Aetna Paper Co. 9.49c
Old Dominion Paper Co. 9.37c

Blue U S M O Safety Writing

No. 48—250,000 lbs., No. 32; rolls, 22 ins. wide, 24 ins. in diameter (3-inch fiber cores).

R. P. Andrews Paper Co. 12.83c

Ground Wood Writing, White and Colored

No. 50—500,000 lbs., white, No. 32; flat, cut any size, min. width 28 ins., max. width 48 ins.

No bids.

No 51—1,000,000 lbs. white, No. 36; flat, cut any size, min. width 28 ins., max. width 48 ins.

No bids.

Chemical Wood Writing, White and Colored

No. 55—1,500,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Whitaker Paper Co. .....
(Bid based on maximum of 800,000 lbs. against any one or more of lots 55, 56, 57 and 58) 7.69c
Barton, Duer & Koch Paper Co. (aggregate not to exceed 500,000 lbs. lots 55 to 58) 7.80c
R. P. Andrews Paper Co. .....
(400,000 lbs. only) 7.82c
Marquette Paper Corp. 7.85c

No. 56—4,000,000 lbs., white, No. 36; flat, cut any size, min. width 21 ins, max. width 48 ins.

Whitaker Paper Co. .....
(Bid based on maximum of 800,000 lbs. against any one or more of lots 55, 56, 57 and 58) 7.44c
Barton, Duer & Koch Paper Co. (aggregate not to exceed 500,000 lbs. lots 55 to 58) 7.25c

No. 57—1,500,000 lbs., white, No. 32; rolls, min. width 16 ins., max. width 48 ins. (3-inch fiber cores).

Whitaker Paper Co. .....
(Bid based on maximum of 800,000 lbs. against any one or more of lots 55, 56, 57 and 58) 7.21c
Barton, Duer & Koch Paper Co. (aggregate not to exceed 500,000 lbs. lots 55 to 58) 7.50c
R. P. Andrews Paper Co. .....
(400,000 lbs. only) 7.59c
Stanford Paper Co. .....
(750,000 lbs. only) 7.62c
Marquette Paper Corp. 7.61c
Cauthorne Paper Co., Inc. .....
(750,000 lbs. only) 7.62c

No. 58—2,500,000 lbs., white, No. 36; rolls, min. width 16 ins., max. width 48 ins. (3-inch fiber cores).

Whitaker Paper Co. .....
(Bid based on maximum of 800,000 lbs. against any one or more of lots 55, 56, 57 and 58) 7.09c
Barton, Duer & Koch Paper Co. (aggregate not to exceed 500,000 lbs. lots 55 to 58) 7.00c
R. P. Andrews Paper Co. .....
(400,000 lbs. only) 6.99c

No. 59—300,000 lbs., blue, buff, green, pink, salmon and yellow Nos. 32 and 36; flat cut any size, min. width 21 ins., max. width 48 ins. Min. order, one color, 10,000 lbs.

Marquette Paper Corp. .....
(No. 32) 8.54c
(No. 36) 8.09c

50% Lithograph-Finish Map

No. 64—120,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 22 ins., max. width 48 ins; the grain to run lengthwise of the sheet.

No bids.

No. 65—500,000 lbs., Nos. 48 and 56; flat, cut any size, min. width 22 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Stanford Paper Co. .....
(No. 48) 15.48c
(No. 56) 15.38c

75% Lithograph-Finish Map

No. 66—150,000 lbs., Nos. 32 and 40; flat, cut any size, min. width 24 ins., max. width 48 ins.; the grain to run lengthwise of the sheet.

Mudge Paper Co. .....
(No. 32) 18.25c
(No. 40) 17.75c
Stanford Paper Co. .....
(50,000 lbs. only) 19.35c

50% White Chart, Lithograph-Finish

No. 68—2,000,000 lbs., No. 72; flat, cut any size, min width 22 ins., max. width 46 ins.; the grain to run lengthwise of the sheet unless otherwise specified.

Franklin Research Co. 19.425c
Barton, Duer & Koch Paper Co.
(250,000 lbs. only) 18.60c
Stanford Paper Co. .....
(92,000 lbs. only) 17.25c

Chemical Wood Manifold, White and Colored

No. 71—300,000 lbs., white, No. 18; flat, cut 21x32, 28x34, 32x42 and 34x44 ins.; the grain to run 21-inch and 42-inch ways.

Old Dominion Paper Co. .....
(100,000 lbs. only) 10.989c
Graham Paper Co. .....
(100,000 lbs. only) 9.90c

No. 73—150,000 lbs., blue, green, pink, and yellow, No. 18; flat, cut 21x32, 22x34, 28x34, 32x42, and 34x44 ins.; the grain to run the 21-inch and 42-inch ways. Min, order, one color 5,000 lbs.

Graham Paper Co. .....
(100,000 lbs. only) 11.00c

50 Per Cent Manifold, White and Colored

No. 76—100,000 lbs., white, No. 18; flat, cut 21x32, 22x34, 28x34, 32x42, and 34x44 ins.; the grain to run the 21-inch and 42-inch ways.

Old Dominion Paper Co. .....
(50,000 lbs. only) 18.728c
Paper Corp. of US 20.50c

No. 78—80,000 lbs., blue, cherry, green, pink, salmon and yellow, No. 18; flat cut 21x32, 22x34, 28x34, and 34x44 ins.; the grain to run the 21-inch way on the 21x32-inch size. Min. order, one color, 5,000 lbs.

Old Dominion Paper Co. .....
(50,000 lbs. only) 18.974c

Chemical Wood Bond, White and Colored

No. 101—80,000 lbs., white, No. 26; flat, cut any size, min. width 21 ins.; max. width 38 ins.

Eastern Corp. 11.46c

No. 102—200,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 38 ins.

Eastern Corp. 9.31c

No. 103—40,000 lbs., blue, No 32; flat, cut 32x42 ins.

Eastern Corp. 10.04c

No. 104—80,000 lbs., blue, buff, green, pink, salmon, and yellow No. 26; flat, cut any size, min width 21 ins., max. width 38 ins. Min. order, one color, 5,000 lbs.

No bids.

25 Per Cent Bond, White and Colored

No. 105—200,000 lbs., white, No. 26; flat, cut any size, min width 21 ins.; max. width 48 ins.

Aetna Paper Co. 17.39c

No. 106—800,000 lbs., white, No. 32; flat, cut any size, min width 21 ins., max. width 48 ins.

Aetna Paper Co. .....
(total 2,000 lbs. only lots 106, 107 and 108) 14.39c

No. 107—800,000 lbs., white, No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. .....
(total 2,000 lbs. only lots 106, 107 and 108) 14.39c

No. 108—900,000 lbs., white, No 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. .....
(total 2,000 lbs. only lots 106, 107 and 108) 14.39c

No. 109—40,000 lbs., yellow, No. 26; flat, cut 34x44 ins. Min. order 5,000 lbs

Aetna Paper Co. 18.39c

No. 110—120,000 lbs., blue, buff, cherry, green, pink, salmon and yellow No. 32; flat, cut any size, min. width 21 ins., max. width 48 ins.

Aetna Paper Co. 15.09c

100% White Bond

No. 128—40,000 lbs., Nos. 32 and 40, flat, cut any size, min, width 16 ins., max. width 38 ins. Min. order, one substance, 2,000 lbs.

Butler Co. 27.16c
Barton, Duer & Koch Paper Co. 23.90c
R. P. Andrews Paper Co. 24.65c
Paper Corp. of US 24.25c

100% Parchment Deed

No. 141—1,000 lbs., No 64; flat, cut 33x34 ins. Min. order 2,000 lbs.

R. P. Andrews Paper Co. 28.03c

Chemical Wood White Ledger

No. 151—400,000 lbs., No. 48, flat, cut any size, min. width 17 ins., max. width 48 ins.

Willcox, Walter, Furlong Co... 8.65c
Eastern Corp. 9.60c

No. 152—80,000 lbs., No. 56; flat, cut any size, min. width 17 ins., max. width 48 ins.

Willcox, Walter, Furlong Co... 8.65c
Eastern Corp. 9.60c

No. 153—80,000 lbs., No. 48, rolls, 34 and 48 ins. (3-inch fiber cores).

Willcox, Walter, Furlong Co. .. 8.15c
Eastern Corp. 9.35c

25 Per Cent Ledger, White and Colored

No. 154—200,000 lbs., white, No. 48; flat, cut 22x34, 24x38, 28x34, 32x42, 34x44 and 38x48 ins. Min. order, one substance, 5,000 lbs.

Aetna Paper Co. .....
(100,000 lbs. only) 14.39c

No. 155—200,000 lbs., white, No. 56; flat, cut 22x34, 24x38, 28x34, 32x42, 34x44 and 38x48 ins. Min. order, 5,000 lbs.

Aetna Paper Co. .....
(100,000 lbs. only) 14.39c

No. 156—100,000 lbs., blue, buff, cherry, green, pink, salmon and yellow, No. 56; flat, cut 24x38, 38x34

and 34x44 ins. Min. order, one substance, one color, 5,000 lbs.
Aetna Paper Co. 15.09c

100% White Ledger

No. 176—40,000 lbs., No. 48; flat, cut 24x38, 28x34, 32x42, 34x44, and 38x48 ins. Min. order 4,000 lbs.
Butler Co. 23.13c
Barton, Duer & Koch Paper Co. 24.35c
R. P. Andrews Paper Co. 28.03c
Paper Corp. of US 24.25c

No. 177—40,000 lbs. No. 64; flat, cut 24x38, 28x34, 32x42, 34x44 and 38x48 ins. Min. order, 5000 lbs.
Butler Co. 28.13c
Barton, Duer & Koch Paper Co. 24.35c
R. P. Andrews Paper Co. 28.03c
Paper Corp. of US 24.25c

Chemical Wood White and Colored Index

No. 183—500,000 lbs., white, 25½x30½—180; flat, cut any size, min. width 17 ins., max. width 42 ins., with protecting colored-paper marker between each 100 sheets.
Willcox, Walter, Furlong Co...
(200,000 lbs. only) 7.75c

No. 184—300,000 lbs., white, 25½x30½—220 and 280; flat, cut 34½x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.
Whitaker Paper Co. .....
(200,000 lbs. only) 7.67c
Willcox, Walter, Furlong Co..... 7.75c

No. 185—40,000 lbs.; buff, 25½x30½—220; flat, cut 32½x42 ins. with projecting colored-paper marker between each 100 sheets.
Willcox, Walter, Furlong Co. .. 8.47c

50 Per Cent Index, White and Colored

No. 189—200,000 lbs., white, 25½x30½—180; flat, cut 24x38, 28x34, 34½x44 and 38x48 ins., with projecting colored-paper marker between each 100 sheets. Min. order, 10,000 lbs.
Whitaker Paper Co. .....
(50,000 lbs. only) 16.40c
Barton, Duer & Koch Paper Co. 13.97c
Walker, Goulard, Plehn Co. ...
(In lots of 10,000 lbs. only) 15.90c
(In lots of 20,000 lbs. only) 15.65c
(In lots of 30,000 lbs. only) 15.50c
(In lots of 50,000 lbs. only) 15.40c
(In lots of 100,000 lbs. only) 15.30c

No. 190—200,000 lbs., white, 25½x30½—220 and 280; flat, cut 24x38, 28x34, 32½x42, 34½x44 and 38x48 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one weight, 10,000 lbs.
Whitaker Paper Co. .....
(50,000 lbs. only) 16.40c
Barton, Duer & Koch Paper Co. 14.65c

No. 191—80,000 lbs., blue, buff, cherry, fawn, green, pink, salmon and yellow, 25½x30½—220 and 280; flat, cut 24x38, 28x34, and 34½x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, one weight, 5,000 lbs.
Barton, Duer & Koch Paper Co. 15.47c

No. 192—80,000 lbs., blue, buff, cherry, fawn, green, pink, salmon and yellow, 25½x30½—180; flat, cut 24x38, 28x34, and 34½x44 ins., with projecting colored-paper marker between each 100 sheets. Min. order, one color, 5,000 lbs.
Barton, Duer & Koch Paper Co. 14.87c
R. P. Andrews Paper Co. 14.47c

100 Per Cent White Index

No. 195—50,000 lbs., 25½x30½—180; flat, cut 24x38, 28x34, 32x42, 34x44 and 38x48 ins.
Barton, Duer & Koch Paper Co. 24.35c
R. P. Andrews Paper Co. 27.16c
Paper Corp. of US 25.98c

No. 196—80,000 lbs., 25½x30½—approximately 250; flat, cut 20½x30½ and 34½x44 ins.
Barton, Duer & Koch Paper Co. 25.35c
R. P. Andrews Paper Co. 27.16c
Paper Corp. of US 25.98c

Coated Cover, White and Colored

No. 201—80,000 lbs., 20x26—120; flat, cut 26½x41 and 32x42 ins.; the grain to run lengthwise of the sheet. Min. order, 5,000 lbs.
No bids.

Antique-Finish Cover, White and Colored

No. 203—100,000 lbs., antique; white, blue, buff, dawn, quaker drab, terra cotta, gray, brown, green, gobelin blue, granite, tea and yellow; flat, 19½x25¼—95, with projecting colored-paper marker between each 500 sheets. Min. order, one color, 5,000 lbs.
Whitaker Paper Co. 8.52c
R. P. Andrews Paper Co. 8.87c

50 Per Cent Laid Cover, Colored

No 205—80,000 lbs., blue, cream, white, gray and green, 20x26—130; flat, cut 19½x25¼ and 28x41 ins., with projecting colored-paper marker between each 500 sheets. Min. order, one color, 2,000 lbs.
Whitaker Paper Co. .....
(180,000 lbs. only) 13.53c
R. P. Andrews Paper Co. 13.73c

Wood Manila

No. 208—40,000 lbs., 24x36—80 and 100; flat, cut 25x38 and 32x42 ins., with projecting colored paper marker between each 500 sheets.
Frank Parsons Paper Co. 5.75c
Whitaker Paper Co. 5.28c

No. 209—150,000 lbs., 24x36—80 and 100; rolls, 21 ins. wide (3-inch fiber cores).
Whitaker Paper Co. 5.28c
Frank Parsons Paper Co. 5.25c

No. 210—40,000 lbs., 24x36—120; rolls, 18-ins. diameter, 4¾, 5¾, and 7½ ins. wide, wound on wooden plugs, 1½-in. hole.
Whitaker Paper Co. .....
(4¾ inch rolls) 5.905c
(5¾ x 7½ inch rolls) 5.655c

No. 2 Kraft

No. 219—250,000 lbs., 24x36—80 to 160; rolls, min. width 9 ins., max. width 48 ins., wound on wooden plugs, 1½-ins. hole, or 3-inch fiber cores as may be specified.
R. P. Andrews Paper Co. 4.65c

25% Blotting, White and Colored

No. 255—100,000 lbs., buff, salmon, and most green, flat, 19x24—160; in wrapped bundles. Min. order, one color, 2,000 lbs.
Whitaker Paper Co. .....
(40,000 lbs. only) 11.50c
Mudge Paper Co. 11.00c
Central Ohio Paper Co. 12.50c
(less than 10,000 lbs.) 13.75c
(10,000 to 36,000 lbs.) 12.00c
13.25c
(36,000 lbs. or more) 11.50c
12.75c
Barton, Duer & Koch Paper Co. 10.87c
R. P. Andrews Paper Co. ....
(buff and salmon) 10.19c
(moss green) 10.46c
Mathers-Lamm Paper Co. 10.87c
Stanford Paper Co. .....
(buff and salmon) 10.50c
(moss green) 12.75c
Old Dominion Paper Co. 10.887c
Cauthorne Paper Co. Inc. 10.79c

High-Finish Chemical Wood Manila Tag

No. 271—40,000 lbs., 24x36—280; flat, cut any size, min. width 24 ins., max. width 38 ins.
Paper Corp. of US 8.87c

Calendered Tag, Manila and Colored

No. 276—500,000 lbs., manila, 22½x28½—150; rolls, 23¼ and 26½ ins. wide (6-inch fiber cores with metal tips).
Barton, Duer & Koch Paper Co. 8.50c

No. 277—50,000 lbs., blue, brown, green, ivory, pink, red, salmon and yellow 22½x28½—150; rolls 23¼ and 26½ ins. wide (6-inch fiber cores with metal tips). Min. order one color, 10,000 lbs.
Barton, Duer & Koch Paper Co. 9.50c

Railroad Board, White and Colored

No. 302—40,000 sheets, white, flat, 22x34 ins., 4-ply, each 100 sheets fully banded. Min. order 10,000 sheets.
Barton, Duer & Koch Paper Co.
per M sheets $34.38
Stanford Paper Co. .....
per M sheet $34.04
Old Dominion Paper Co. .....
per M sheets $33.978

No. 303—50,000 sheets, white, flat, 22x34 ins., 8-ply, each 100 sheets fully banded. Min. order 5,000 sheets.
Barton, Duer & Koch Paper Co.
per M sheets $49.02
Stanford Paper Co. .....
per M sheets $48.97
Old Dominion Paper Co. .....
per M sheets $48.968

No. 305—30,000 sheets, ash gray, green, orange and red, flat, 22x34 ins., 4-ply, each 100 sheets fully banded. Min. order, one color, 5,000 sheets.
Barton, Duer & Koch Paper Co.
per M sheets $44.99
Stanford Paper Co. .....
per M sheets $44.85
Old Dominion Paper Co. .....
per M sheets 44.838

Wood Bristol, Colored

No. 306—200,000 lbs., buff, 22½x28½—150; rolls 20 ins. wide (6-inch iron cores).
Barton, Duer & Koch Paper Co. 6.40c
Frank Parsons Paper Co. 5.50c

No. 307—40,000 lbs., 22½x28½—150; flat, cut 32x42 ins.
Barton, Duer & Koch Paper Co. 6.79c
Frank Parsons Paper Co. 5.85c

No. 309—200,000 lbs., blue, buff, gray, green, melon, pink, and yellow; 22½x28½—184; rolls, 20 ins. wide (6-inch iron cores).
Barton, Duer & Koch Paper Co. 6.40c

United States Postal Card Bristol

No. 325—1,200,000 lbs., 22½x28½—188; rolls, 22 ins. wide, 30 ins. in diameter and 33 ins. wide, 36 ins. in diameter (6-inch iron cores).
Whitaker Paper Co. .....
(1,800,000 lbs. any one or more lots 325, 326 and 327) 6.22c
R. P. Andrews Paper Co. ....
(total 1,500,000 lbs. lots 325, 326 and 327) 6.17c

No. 326—1,200,000 lbs., 22½x28½—188; rolls, 22 ins. wide, 30 ins. in diameter and 33 ins. wide, 36 ins. in diameter (6-inch iron cores).
Whitaker Paper Co. .....
(1,800,000 lbs. any one or more lots 325, 326 and 327) 6.22c
R. P. Andrews Paper Co. ....
(total 1,500,000 lbs. lots 325, 326 and 327) 6.17c

No. 327—1,200,000 lbs., 22½x28½—188; rolls, 22 ins. wide, 30 ins. in diameter, 33 ins. wide and 36 ins. in diameter (6-inch iron cores).
Whitaker Paper Co. .....
(1,800,000 lbs. more one or more lots 325, 326 and 327).. 6.22c
R. P. Andrews Paper Co. 6.17c
(total 1,500,000 lbs. lots 325, 326 and 327) 6.17c

News Board

No. 360—500,000 lbs., 26x38 ins., No. 100, flat, cut any size, min. 21x32 ins., max. 40x52½ ins. (to be trimmed square on four sides).

Binder's Board, No. 1 Quality

No. 366—250,000 lbs., flat, to trim 25x30 ins., Nos. 16, 18, 20, 25, 30 and 40.

Mathers-Lamm Paper Co. 4.456c

No. 367—40,000 lbs., 25¾x30¾, Nos. 12 and 20; flat, to trim 34x44 ins.

No bids.

Binder's Board Best Quality

No. 368—20,000 lbs., flat, to trim 20x30 ins., and 22x28 ins., Nos. 18, 20, 25, 30, 35, 40 and 45. Min. order, 5,000 lbs.

Consolidated Paper Co. ..... (less than carloads) 5.87c

Chestnut Cover Board

No. 369—40,000 lbs., flat, to trim 25x30 ins. Nos. 17, 19, 21, 25, 31 and 41.

Mead Sales Co. 3.90c

STRESSES AID IN WAR EFFORT

(Continued from page 8)

importance of continuity of operation, unobstructed by microbiological slime accumulations that interfere with heat transfer and that otherwise require unit shut down for cleaning. Also featured was the influence of continuous maintenance of maximum heat exchange efficiency on the design of new plant and plant extensions. Included were factors of fuel, labor and maintenance savings for the central and for the industrial power plants, and the direct relationship of these activities to the war production was shown. Representatives in attendance included R. B. Martin, S. A. Cole, J. G. Dobson, R. C. Clement, E. Germond, F. Menzenhauer, R. S. Palmer and J. C. Cochrane.

Wright-Hibbard Truck Co.

The exhibit of the Wright-Hibbard Industrial Electric Truck Company featured four different sizes of two types of industrial electric trucks. On display were two sizes of the "RBH" series of low lift trucks, and two sizes of the "TRC" series of high lift trucks. All models were of the small, compact type, in which the company specializes. Representatives in attendance included R. F. Hibbard, president of the company, George E. Lever of the New York office, H. W. Stoddard of the Newark, N. J. office, Arthur Williams of the Boston office, Minor Sebring and Leonard Sabin.

Marinette Paper Co. Buys Mill

Marinette Paper Company, a subsidiary of the Scott Paper Company, has made an agreement to buy the Fort Edward, N. Y., mill of the International Paper Company, the Scott company announced yesterday. The mill is about five miles from the converting plant of the Marinette company in Glens Falls.

St. Regis Paper Co. to Expand

A $3,000,000 construction and expansion program was announced early this week by St. Regis Paper Company at the Deferiet pulp mill, one of six company mills located in northern New York. R. K. Ferguson, president, said that the program contemplates installation of a new high-speed Fourdrinier machine, expansion of capacity to sulphite and bleached groundwood, a battery of latest type Roberts grinders and a new steam and bleaching plant.

BEARDSLEY RUML, **Treasurer, R. H. Macy & Co., Inc.—Chairman, Federal Reserve Bank of New York, says**

"In a normal peacetime year, 10% of our national income had its source in trade with foreign lands. In the same way, we will all be better off to have post-war foreign trade contribute 10% or even more to America's pay envelope."

Mr. Ruml also says: "It is unrealistic to toy with theories that we can, in our post-war economy, get along just as well as not without that 10% contribution of foreign trade. For we will want full employment for 55,000,000 workers and a high standard of living that can come only from exchanging goods and services across our borders in large quantities. And by ignoring foreign trade, we would jeopardize the standard of living of all our people, not only the millions who might find themselves for that reason unemployed."

5,000,000 AMERICANS
WILL DEPEND ON
FOREIGN TRADE
FOR THEIR POST-WAR LIVING

Do you want your share of present and post-war export business? Have you a department headed by specialists with world-wide contacts to assure you of your just percentage of this export trade?

HERE IS YOUR EXPORT DEPARTMENT

Join a limited group of manufacturers of non-competing lines.
Have your own export department in New York. Assure yourselves of getting the major percentage of the available business by following a time tested plan, details of which will be given later if you are interested in joining the group.

THE TIME TO PLAN AND ACT IS NOW!
IT TAKES MONTHS TO DO ALL THE PRELIMINARY WORK.
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Advertiser devotes all time, knowledge and experience and effort exclusively to the export of paper.

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Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group—Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

PAPER OUTPUT HIGH

Paper and paper products of many types are so essential to the successful progress of the war that the civilian supply must be restricted. Unlike some other forms of consumer goods, the all-over government demand for paper is expected to continue some months after the end of the war in Europe. Down over the years for half a century or more, the paper industry has steadily expanded in the United States. Production for the first nine months of 1944, of all grades of paper, is estimated at 12,889,000 tons, compared with 12,798,000 tons for the same period in 1943, or an increase of 0.7%. Included in the over-all figures are 6,755,000 tons of paper board for 1944, and 6,475,000 tons for the nine months of 1943, an increase of 4.3%.

The great development of paper production in the United States and the supremacy of our country as a producer, is indicated in the last year in which world paper production was reported by the Department of Commerce. In 1937, United States total consumption was 16,039,864 tons or 248.2 pounds per capita. Canada consumed 869,456 tons or 167.8 pounds per capita; China 8 pounds; France 26.4 pounds; Germany 102.9 pounds; Japan 23.6 pounds; Norway 100.4 pounds; Sweden 149.6 pounds; Russia 12.1 pounds, and the United Kingdom 152.8 pounds per capita. In 1937, Argentina consumed 29.6 pounds per capita; Brazil 8.2 pounds; Chile 15.9 pounds; Cuba 24.2 pounds and Mexico 7.2 pounds per capita.

Over-all production in the United States for the first nine months of 1944 of 12,889,000 tons, as reported by the Department of Commerce, indicates increased output in eleven types of paper and paper board as follows: shipping sack 31.5%; special industrial 24.5%; absorbent 5.7%, and building 2.10%. Increases in output of board were: Container 5.8%; folding boxboard 1.3%; cardboard 8.6%; building board 1.4%; tube stock 60.8%. and miscellaneous board 39.0%. Decreases in nine types of paper and paper board were as follows: newsprint 13.1%; groundwood 1.6%; book 10.0%; fine 6.60%; wrapping, 4.5%; sanitary 1.2%, and tissue 3.4%. The output of setup boxboard declined 12.5%.

Production of the eleven types of paper as charted by the Department apparently declined in September, except absorbent papers which indicates leveling out. In its report on the paper situation the Department of Commerce states in its current and latest report that, production of paper and paper board during September amounted to 1,421,000 tons, less than 1% under the monthly average of 1,432,000 tons for the first nine months of 1944. Paper production in September was 676,000 tons and board output was 774,000 tons, 0.7% and 2% respectively, below the monthly averages for the January-September period. The report goes on to say that conservation of critical war materials such as paper must be continued despite dissolution of the Conservation Division of the War Production Board. The paper conservation campaign, with a goal of 1,000,000 tons a year, is expected to achieve this figure by December 31, 1944. Under an amendment to Conservation Order M-241, issued October 16, 1944, manufacturers of paper and paper board are required to hold in reserve for future distribution, on order of the WPB, 35% of their total production of groundwood, printing, book, writing, and coarse wrapping paper. Reserve production of condenser tissue and sanitary food container stock remains at 100% of production, but with the reclassification of groundwood, printing, and the papers mentioned above, reserves of all other paper and paper board controlled by M-241 were reduced to 20% of production. Certain types of paper board are not controlled by Order M-241, but are subject to the following specific Conservation Orders: container board, M-290; paper board, M-378; building boards, asbestos, and asbestol filled paper, M-79.

The report points out that mill and consumer paper and paper board inventories subject to provisions of amended Order M-241, are now restricted to 30 tons or 30 days' supply, whichever is greater; inventories of folding and setup box manufacturers are fixed at a maximum of 40 tons or 60 days' supply, based upon their average consumption rate during the latest three month period. M-241 was further amended on October 26 to require a one-time certification of familiarity with the provisions of the order and agreement to comply with them. This certification need not accompany each individual order for paper. A compliance certificate is now required which must state that the converter purchasing the paper is familiar with M-241-a, and that he will use the paper purchased in compliance therewith. The purchaser need file the certificate only once, since it is not required with individual succeeding orders. Converted products are defined in the order as any article or type of converted paper resulting from processing

of pulp, paper or paper board, which alters the form or characteristics of those materials. Other changes made in L-120 were as follows: Schedule I (paper and paper board for use in commercial printing); Schedule II (paper and paper board for use in book publishing); and Schedule III (fine writing papers); effective November 2, 1944, which were largely clarifying as to certain provisions. Changes made in Schedule I modified one provision as to poster paper, permitting 55-pound poster for all outdoor use. Changes made in Schedule III removed the ash content of the provisions applying to ledger paper and bristols.

In the summary of its report the Department of Commerce states that paper will be an important element in the rehabilitation of government and industry as well as social reestablishment in the war-torn countries of Europe, notwithstanding their level of economic activity. In order to fulfill its obligation to meet both domestic and foreign needs, the pulp and paper industry will be expected to produce at current high levels.

Apollo Offers Purchasing Service

The Apollo Chemical Company, Inc. announces the opening of offices at 51 East 42nd street, New York, 17, N. Y. The company is engaged in the buying and selling of chemicals, oils, waxes, resins, gums and all other chemical raw materials, and is offering a complete purchasing service including assistance in filing applications for allocated materials, priorities, etc.

An attractive, four-page folder, describing the service and chemicals, is available without charge, upon request to the Apollo Chemical Company, Inc.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1944		Corresponding Weeks—1943	
Oct. 14	94.7	Oct. 16	90.2
Oct. 21	91.6	Oct. 23	88.8
Oct. 28	92.7	Oct. 30	88.5
Nov. 4	94.1	Nov. 6	89.9
Nov. 11	92.3	Nov. 13	89.6
Nov. 18	*91.7*	Nov. 20	91.4

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1943	87.2	88.9	89.5	88.7	91.4	84.8	84.3	91.0	88.3	89.6	89.6	82.0	87.8
1944	89.6	89.6	89.2	88.8	89.7	90.7	81.1	92.5	90.1	*93.6*			

COMPARATIVE YEARLY SUMMARIES

	1937	1938	1939	1940	1941	1942	1943	1944
Year to Date	83.2	71.3	82.3	86.1	96.8	91.7	88.4	*90.2*
Year Average	79.8	71.5	83.4	85.6	97.4	90.4	87.8	

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1938	56	63	63	60	60	59	59	69	70	73	67	61	64
1939	65	73	76	74	69	73	68	77	82	91	88	77	77
1940	78	75	74	76	82	85	77	79	78	85	83	77	78
1941	81	88	89	89	91	94	92	98	95	99	98	90	92
1942	102	101	101	95	82	72	68	75	76	81	82	77	84
1943	86	88	94	94	96	94	89	96	94	94	93	87	93
1944	90	96	95	96	96	96	85	96	92	*95*			

Week ending Oct. 14, 1944—96
Week ending Oct. 21, 1944—94
Week ending Oct. 28, 1944—95
Week ending Nov. 4, 1944—96
Week ending Nov. 11, 1944—96
Week ending Nov. 18, 1944—96

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

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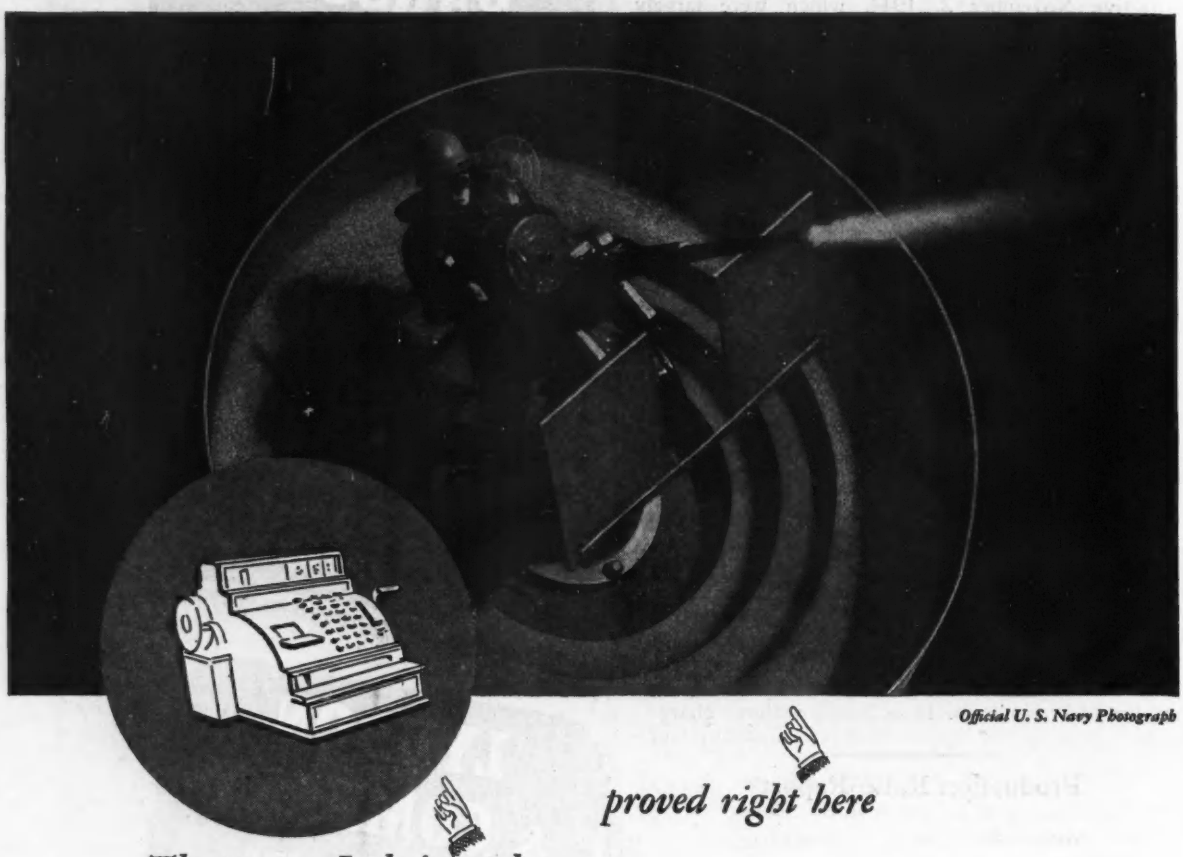

Official U. S. Navy Photograph

The proper Lubricant here

proved right here

A FEW YEARS AGO a large manufacturer of cash registers sought a better lubricant than was then available. Containing as many as 14,000 precision parts which require lubrication, these machines must operate in a wide range of temperatures—from cold outdoor curb markets to hot cleaning and pressing shops.

When the problem was placed before Gulf technologists, they developed the answer—GULF PLASTIC PETROLEUM! This revolutionary new type of lubricant withstands temperatures up to 150° F. and yet acts freely at temperatures as low as —60° F. Its acceptance grew rapidly, and it was adopted by many manufacturers for lubricating delicate mechanisms. Then war came.

The Oerlikon antiaircraft gun—used by the Navy to knock down Axis divebombers—presented a difficult lubrication problem. In operating this rapid-fire weapon, a strong spring provides the power for feeding the shells into the firing chamber. This spring must be lubricated to permit free action under widely varying climatic conditions and to protect it from the corrosive action of salt air and spray. Gulf Plastic Petroleum proved to be ideal for this vital application—another example of how Gulf products and research are meeting the demands of industry and are helping in the war effort.

If you have a problem in any way connected with the use of a petroleum product, Gulf can give you effective help in finding the solution. Write, wire, or phone your nearest Gulf office today.

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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

United States Patents on Papermaking

Third Quarter, 1944

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Because, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete; also, it is possible that the list may contain some patents which do not apply specifically to pulp and paper manufacture.

Copies of any of the following patents may be obtained from the United States Patent Office, Washington, D. C., by sending ten cents for each patent desired. The number of the patent, the name of the inventor, and the title of the patent should be given in the request. Personal checks and postage stamps are not accepted in payment for patents. Books of coupons may be purchased for two or ten dollars, good for 20 or 100 patents. Coupon orders do not have to be accompanied by letters of transmittal.

July 4, 1944

2,352,645. Container making and filling machine. August G. Liebmann, assignor of one-half to Harry A. Blessing, Washington, D. C. Filed Jan. 16, 1943. 7 claims. (Cl. 93-3). A packaging machine for making insulated cartridge containers.

2,352,646. Method of making, packing, and sealing cartridge containers. August G. Liebmann, assignor of one-half to Harry A. Blessing, Washington, D. C. Filed June 18, 1943. 7 claims. (Cl. 93-3). A method of fabricating insulated cartridge containers.

2,352,652. Method of producing drawn moistureproof articles. Wirt Morton and Donald G. Magill, assignors to American Can Company, New York, N. Y. Filed Aug. 3, 1939. 1 claim. (Cl. 113-51). A method of drawing composite laminated moistureproof cup-shaped fiber container parts in a continuous operation from an advancing web of fiber base stock.

2,352,658. Method of coating paper. Howard B. Richmond and Gilbert K. Dickerman, assignors to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis. Filed Sept. 26, 1941. 12 claims. (Cl. 117-111). In coating paper between juxtaposed rolls rotating in opposite directions, each of the rolls is driven at a surface speed of opposite sign of about 0.25 to 10% different from the translatory speed of the web.

2,352,665. Box wrapping system. John S. Stokes, assignor to Stokes and Smith Company, Philadelphia, Pa. Filed Dec. 9, 1941. 12 claims. (Cl. 93-54.2). A semi-automatic system for producing assemblies of unstayed box blanks and wrappers.

2,352,720. Gluing mechanism for box-making machines. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed June 20, 1942. 18 claims. (Cl. 91-49). An adhesive applying roll.

2,352,766. Paper box. Walter H. Bogue, East Orange, N. J. Filed July 27, 1943. 3 claims. (Cl. 229-6). A container comprising a body member having a base and a plurality of side members integral therewith and extending upwardly therefrom.

2,352,865. Container for asphalt, tar, and like products. Harry Smith, San Francisco, Calif. Filed July 1, 1940. 5 claims. (Cl. 220-64). A coating for the inside of a container comprises a fluid containing glycerin, alcohol, acetone, cellulose acetate, and toluenesulfonamide-formaldehyde resin.

2,352,899. Sealing head and machine. Karl R. Karlson, assignor to Union Bag Paper Corporation, New York, N. Y. Filed May 26, 1941. 4 claims. (Cl. 226-56). A filled bag sealing machine.

2,352,900. Composition board. Horace L. Kincaid, assignor to Kincaid Kottentex Manufacturing Company, Inc., Tuscaloosa, Ala. Filed May 13, 1941. 1 claim. (Cl. 154-45.9). The center is a mat of fireproofed ground raw cotton and finely ground rock material faced with heavy paper.

2,352,916. Container part leakage testing machine. Herbert Schrader, assignor to Continental Can Company, Inc., New York, N. Y. Filed April 23, 1941. 17 claims. (Cl. 73-51).

2,352,922. Paper manufacture. Joseph J. Thomas, Robert A. Diehm, and Ian C. Somerville, assignors to Röhm & Haas Company, Philadelphia, Pa. Filed Oct. 6, 1939. 6 claims. (Cl. 92-21). A high wet-strength paper contains 0.2-5% (of the weight of the paper fibers) of a water-soluble protein and 10-100% (of the weight of the protein) of a synthetic sulfonated aromatic compound having tanning properties.

2,352,927. Lunch box and blank. Earl B. Whitehead, assignor to Normain Corporation, Norwich, Conn. Filed Jan. 7, 1943. 2 claims. (Cl. 229-27).

2,352,968. Method of making paper pulp screen plates. Samuel T. Orton, assignor to Union Screen Plate Company, Fitchburg, Mass. Filed Dec. 16, 1941. 2 claims. (Cl. 204-24).

2,352,978. Wallpaper machine. William F. Shoemaker, Evansville, Ind. Filed March 24, 1943. 1 claim. (Cl. 91-14). A method of applying adhesive to wallpaper.

2,352,991. Machine for conditioning felts of papermaking machines. Frederick W. Vickery, assignor to Vickery Incorporated, Boston, Mass. Filed April 14, 1941. 8 claims. (Cl. 92-50). A combination of a hollow cylinder and a suction box, with a method for applying cleaning liquid to the felt.

2,352,994. Receptacle. James J. Morgan, assignor to General Fibre Box Company, West Springfield, Mass. Filed May 7, 1942. 2 claims. (Cl. 229-52). A unitary foldable blank of fiber board adapted for setting up into a unitary receptacle.

July 11, 1944

2,353,149. Thin stock regulator. Hervey G. Cram, assignor to The Cram Company, Inc., Appleton, Wis. Filed Oct. 25, 1941. 4 claims. (Cl. 137-78). A consistency responsive apparatus for thin pulp.

2,353,178. Container and method of making same. George A. Moore, assignor to Shellmar Products Company, Mount Vernon, Ohio. Filed July 26, 1940. 4 claims. (Cl. 229-14).

2,353,182. Method of forming basket liners. Howard H. Niederauer, assignor to Fruit & Produce Packing, Inc., Indianapolis, Ind. Filed July 23, 1941. 15 claims. (Cl. 93-1). A method of forming a one-piece paper board liner.

2,353,183. Basket liner. Howard N. Niederauer, assignor to Fruit & Produce Packing, Inc., Indianapolis, Ind. Filed Dec. 10, 1942. 3 claims. (Cl. 217-3).

2,353,298. Folding box and blank for making same. Irving Dorfman, assignor to Federal Carton Corporation, New York, N. Y. Filed June 7, 1943. 4 claims. (Cl. 229-16). A flat box-blank which has integral longitudinal box-walls and transverse box-walls which are connected at respective main hinge lines which are parallel to each other.

2,353,311. Bag and method of making same. Karl R. Karlson, assignor to Union Bag & Paper Corporation, New York, N. Y. Filed May 26, 1941. 1 claim. (Cl. 93-35). Method of making a bag, closed mechanically but not hermetically, and capable of hermetic heat sealing after filling.

2,353,376. Container. Clifford C. Vatter, assignor to The Bradley & Gilbert Company, Louisville, Ky. Filed July 23, 1942. 20 claims. (Cl. 229-6). A slide carton.

2,353,402. Method of making impervious bags. Alfred B. Haslacher, New York, N. Y. Filed April 8, 1942. 25 claims. (Cl. 93-35). The bags are made of flexible material having at least its interior surface thermoplastic.

2,353,419. Machine for forming box blanks. Eugene S. Smithson, Rochester, N. Y. Filed June 11, 1942. 14 claims. (Cl. 93-58.3).

2,353,456. Dispensing container. Fred C. Gluck and Rankin C. McCaskey, assignors to Minerva Wax Paper Company, Minerva, Ohio. Filed March 20, 1940. 16 claims. (Cl. 206-58).

2,353,605. Bag. Harry F. Waters, New York, N. Y. Filed May 14, 1940. 8 claims. (Cl. 229-59). A bag of the automatically opening bottom type.

July 18, 1944

2,353,656. Match book holder. Cornelius J. Donovan, Yonkers, N. Y. Filed Aug. 31, 1943. 6 claims. (Cl. 206-48).

2,353,669. Package wrapping. Bill Y. James, assignor of one-half to Caroline Y. James, Miami, Okla. Filed Jan. 2, 1942. 4 claims. (Cl. 229-87).

2,353,680. Covering material. Arthur D. MacNutt, assignor to Certain-Teed Products Corporation, New York, N. Y. Filed Feb. 18, 1941. 5 claims. (Cl. 117-8). A roofing sheet.

2,353,721. Coating machine. James H. Gordon, Jr., and Victor T. Grover, assignors to American Can Company, New York, N. Y. Filed June 10, 1941. 8 claims. (Cl. 91-55). Machine for coating containers.

2,353,761. Carton or container. William A. Ringler, assignor to National Folding Box Company, New Haven, Conn. Filed Feb. 7, 1942. 12 claims. (Cl. 229-7).

2,353,762. Container. John E. Robinson and Richard P. Bigger, assignors to American Can Company, New York, N. Y. Filed Feb. 28, 1941. 8 claims. (Cl. 229-3.5). An oilproof fiber container for lard, vegetable and mineral oil, and the like.

2,353,789. Repellent roll for handling adhesive sheets. Gustave Schieman, assignor to International Plastic Corporation, Morristown, N. J. Filed April 17, 1942. 9 claims. (Cl. 164-60). A repellent roll for use in a slitting machine for slitting pressure sealing and pressure sensitive sheets and tapes.

2,353,821. Apparatus for making compressed wadding rolls. Charles A. Fourness and Rudolf A. Moravek, assignors to Paper Patents Company, Neenah, Wis. Filed Aug. 8, 1941. 11 claims. (Cl. 242-55). Apparatus for winding an endwise compressed sheet of cellulosic tissue into the form of a roll.

2,353,823. Bleaching cellulosic materials. Clifford A. Hampel, assignor to The Mathieson Alkali Works, Inc., New York, N. Y. Filed Sept. 26, 1941. 5 claims. (Cl. 8-106). The bleaching agent is an alkali or alkaline earth chlorite and a persulfate at a pH of about 3-11.

2,353,852. Method of determining the receptivity of sheet materials to coatings, inks, and the like. Ben W. Rowland, Douglas Fronmuller, and Johannes A. Van den Akker, assignors to The Institute of Paper Chemistry, Appleton, Wis. Filed March 7, 1942. 3 claims. (Cl. 73-51). A substantial quantity of a fluid testing material is applied to a restricted area of the sample, the material is spread over the sample at a relatively high speed, the excess of the testing material removed from the surface by use of a suction current, and the re-

sultant pattern evaluated by comparison with a known standard.

2,353,864. Reinforced abrasive article. Charles E. Wooddell, assignor to The Carborundum Company, Niagara Falls, N. Y. Filed Oct. 20, 1943. 8 claims. (Cl. 51-209). The backing plate is a plurality of layers of felted fibers compressed together and impregnated with synthetic resin cured to a strong hard condition.

2,353,879. Bottle cap. Kempton Clark and Herbert G. Vore, assignors to American Seal-Kap Corporation of Delaware, Wilmington, Del. Filed Nov. 19, 1940. 1 claim. (Cl. 215-38). At least the skirt portion is coated with polyvinyl acetate.

2,353,983. Purification of pulp. Hellmuth Banning, Duren, Germany; vested in the Alien Property Custodian. Filed March 7, 1938. 3 claims. (Cl. 233-46). A centrifugal separator for the purification of pulp from impurities.

2,353,994. Machine for treating paper. Percival W. Chapman and Oscar A. Jouret, assignors to The Lester & Wasley Co., Inc., Norwich, Conn. Filed July 24, 1940. 1 claim. (Cl. 92-68). The patent covers a device for deckling and skiving paper which is adjustable to such an extent that any variation of edge between a very thinly skived edge to an abrupt deckled edge may be readily produced.

2,354,007. Paper machine flow mixed. Philip H. Goldsmith, Wilmington, Del. Filed May 9, 1941. 2 claims. (Cl. 92-43). Mixing of the various components of stock is accomplished at a point sufficiently remote from the forming surface to permit subsequent removal of air and the establishment of a smooth and uniform flow of stock before it reaches the forming surface. The mixing step and the air removal step are physically separated from one another.

2,354,033. Method and apparatus for coating sheet materials. Lyle L. McGladrey and Cecil M. Rhodes, assignors to Rapinwax Paper Company, Minneapolis, Minn. Filed Oct. 13, 1941. 14 claims. (Cl. 117-102). An excessive surface of coating is applied to the sheet, the coated sheet passed over a vacuum chamber and the excess coating is removed by drawing the coated surface of the sheet against the edges of the vacuum chamber.

2,354,060. Moistureproof sheet material. Cecil M. Rhodes and John P. Sermattei, assignors to Rapinwax Paper Company, Minneapolis, Minn. Filed May 16, 1941. 8 claims. (Cl. 117-68). Paper or regenerated cellulose is coated on the inside surface with an under coat of 0.3-1.2 pounds of latex solids containing a small amount of glycerine per 2880 sq. ft. ream and a top coat of paraffine wax and on the outside with paraffine only, the total wax on the two sides being 3-7 pounds.

2,354,098. Cardboard box. William Bamber, Banstead, England. Filed July 21, 1942. 7 claims. (Cl. 229-16).

2,354,175. Apparatus for the recovery of heat and chemicals from waste liquor. Leslie S. Wilcoxson, assignor to The Babcock Wilcox Company, Newark, N. J. Filed July 27, 1940. 12 claims. (Cl. 23-262). A furnace for burning waste liquors containing combustible organic matter to recover the chemicals and a method for utilizing the combustion gases to generate steam.

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2,354,186. Insulation package. Williams T. Donahue, assignor to Johns-Manville Corporation, New York, N. Y. Filed Jan. 14, 1942. 3 claims. (Cl. 206-46).

2,354,318. Calcium carbonate-adhesive base product and method of preparing coatings therefrom. Ausker E. Hughes, Harold B. Browne, and Howard F. Roderick, assignors to Wyandotte Chemicals Corporation, Wyandotte, Mich. Filed Jan. 8, 1941. 9 claims. (Cl. 106-148). Precipitated calcium carbonate (particle size between 1 and 5 microns) and 1-2% of an adhesive (casein or soybean protein) are dry milled until the adhesive requirements of the calcium carbonate decreases an appreciable percentage (about 3 hours).

2,354,369. Bottle carrier. Clyde L. Gilbert, assignor to American Coating Mills, Inc., Elkhart, Ind. Filed April 19, 1943. 6 claims. (Cl. 229-52).

2,354,370. Bottle carrier. Clyde L. Gilbert, assignor to American Coating Mills, Inc., Elkhart, Ind. Filed Aug. 2, 1943. 9 claims. (Cl. 229-52).

2,354,401. Meat-cooking carton. Christophen A. Pemberton, Toronto, Canada. Filed July 8, 1943. 3 claims. (Cl. 99,438).

2,354,528. Carrier for bottles. Roy E. Lowey, Earl C. Potter, and Charles B. Kilmer, assignors to Container Corporation of America, Chicago, Ill. Filed Dec. 1, 1941. 2 claims. (Cl. 224-45).

2,354,543. Carton, Francis K. Ratcliff, assignor to Container Corporation of America, Chicago, Ill. Filed May 1, 1941. 1 claim. (Cl. 229-51).

2,354,553. Method of recovering constituents of waste sulphite liquor. Daniel L. Sherk, Cloquet, Minn. Filed Jan. 10, 1940. 6 claims. (Cl. 204-180). Sulphite waste liquor is subjected to electrodialysis, by which it is separated into concentrated basic hydroxide and sulphur compounds.

2,354,556. Method of forming laminated tubular bodies. William F. Stahl, Evanston, Ill. Filed June 9, 1941. 4 claims. (Cl. 93-94).

2,354,564. Sheet pulp container male die apparatus. Lee M. Eiley, assignor of one-third each to Julian T. Lett and Reeley B. Wiley, Marion, Ind. Filed May 27, 1942. 7 claims. (Cl. 18-45).

2,354,574. Moistureproofed glassine paper. Clarence M. Carson, assignor to Wingfoot Corporation, Akron, Ohio. Filed Aug. 25, 1942. 1 claim. (Cl. 117-155). Glassine paper is coated with about 6 pounds of a transparent, heat-sealable coating per 3000 square feet; the coating consists of 100 parts of a copolymer of equal parts of vinyl chloride and diethyl chloromaleate, 25 parts of polymerized terpene, 25 parts of hydrogenated methyl abietate, 37.5 parts of paraffin, and 25 parts of dibutyl sebacate.

2,354,590. Container and method of manufacture. Paul M. Gilfillan and Irving Gurwick, assignors to Shellmar Products Company, Mount Vernon, Ohio. Filed Jan. 10. 1941. 9 claims. (Cl. 93-35).

2,354,600. Folding box. Murray Kretchmer, New York, N. Y. Filed Aug. 22, 1941. 10 claims. (Cl. 229-52).

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2,354,662. Method of sizing paper. Robert S. Bryce, assignor to Eastman Kodak Company, Rochester, N. Y. Filed July 16, 1941. 6 claims. (Cl. 117-156). Paper is treated with dilute aqueous solutions of gelatin and dihydroxymethylurea and then heated to liberate formaldehyde from the dihydroxymethylurea; the temperature is not high enough to decompose the cellulose.

2,354,741. Article dispensing container. Harry Crane, Philadelphia, Pa. Filed Jan. 22, 1944. 2 claims. (Cl. 229-7).

2,354,812. Separation of tall oil into its constituents. John D. Jenkins, assignor to Pittsburgh Plate Glass Company, Allegheny County, Pa. Filed Dec. 19, 1941. 2 claims. (Cl. 260-97.5). Tall oil is dissolved in a liquid hydrocarbon solvent and flowed countercurrent to a mixture of water and a water-miscible polar solvent atnd then to a liquid hydrocarbon solvent, thus separating the tall oil into a fraction rich in resin acids and one rich in fatty acids.

2,354,820. Pocket envelope. Frank L. McCarty, New Bedford, Mass. Filed June 29, 1942. 1 claim. (Cl. 229-72).

2,354,825. Means and method for decurling envelope flaps. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed Jan. 4, 1941. 8 claims. (Cl. 93-62).

2,354,838. Waxy starch product and method of making. Herman H. Schopmeyer and George E. Felton, assignors to American Maize-Products Company, New York, N. Y. A method of making a thin-bodied starch with high adhesive strength by oxidation at a pH of 7 to 11.

2,354,867. Basket. Daniel A. Larkin, assignor to The Hinde & Dauch Paper Company, Sandusky, Ohio. Filed June 11, 1942. 3 claims. (Cl. 229-52). A basket of corrugated board.

2,354,920. Manufacture of containers and apparatus therefor. Manual S. Lopes, Jr., Alameda, Calif. Filed May 27, 1940. 15 claims. (Cl. 1-11). A stapling machine assembly.

2,354,952. Paper winder. Lloyd Hornbostel, assignor to Beloit Iron Works, Beloit, Wis. Filed May 8, 1941. 10 claims. (Cl. 242-75). An improvement to a twin under drum paper winder.

2,354,989. Apparatus for wrapping. Carlo J. Fusco, San Francisco.

2,355,180. Plastic compound and method of making same. Marc de Becker Remy, Detroit, Mich. Filed April 21, 1941. 1 claim. (Cl. 106-123). Alkaline solutions of lignin and wheat gluten are mixed at approximately the same temperature and pH and the mixture is coagulated by the addition of acid.

2,355,206. Folding food serving box. Samuel O. Davidson, Jr., assignor to National Paper Box Co., Kansas City, Mo. Filed May 29, 1942. 1 claim. (Cl. 229-34).

2,355,233. Container. Walter H. Newton, assignor to Arvey Corporation, Chicago, Ill. Filed Feb. 19, 1943. 3 claims. (Cl. 229-24).

2,355,243. Paper pulp Stock washer. Louis J. Scheid, assignor to Watervliet Paper Company, Watervliet, Mich. Filed March 27, 1942. 1 claim. (Cl. 68-182). A plurality of washer tanks with method of operation.

2,355,278. Apparatus for coating or saturating material. Willis G. Davis, assignor to Ascote, Inc., Garwood, N. J. Filed April 16, 1941. 2 claims. (Cl. 91-46).

2,355,313. Bag. William A. Lurie, New Orleans, La. Filed July 22, 1942. 3 claims. (Cl. 229-66).

2,355,333. Reenforced waterproofing sheet material. Harry N. Sandell, assignor to Sandell Manufacturing Company, Inc., Watertown, Mass. Filed June 17, 1943. 11 claims. (Cl. 72-116).

2,355,348. Multiple use mailing folder. Le Roy Wellver, St. Paul, and Hugh H. Sievers, Minneapolis, Minn. Filed July 18, 1941. 1 claim. (Cl. 229-73).

2,355,391. Papermaking method and apparatus. Robert F. Nelson and John N. Tuttle, assignor to The Glassine Paper Company, West Conshohocken, Pa. Filed July 27, 1940. 9 claims. (Cl. 34-4). A web of paper is dried by passage between heated drums and at least one felt and subjecting said felt to infrared radiation in the range of 6500 to 14,000 Angstroms to effect drying thereof.

2,355,424. Manufacture of composite products. Karl Dammann, assignor to Patterson Parchment Paper Company, Bristol, Pa. Filed June 4, 1941. 18 claims. (Cl. 91-18). A machine for applying a layer of coating material to a web of paper.

2,355,463. Process for making soluble starch. Walter A. Nivling (Lyman E. Nivling and Owen C. Nivling, Newton, Mass., administrators). Filed May 19, 1941. 12 claims. (Cl. 127-33). Method of making an oxidized starch.

2,355,493. Container cap. Isaac L. Wilcox and Robert F. Huntley, assignors to Oswego Falls Corporation, Fulton, N. Y. Filed July 12, 1937. 2 claims. (Cl. 215-38). A hood cap for bottles.

2,355,507. Bearings for rolling mills, mixers, and calenders. Joseph Brown, assignor to David Bridge & Company Limited, Castleton, Rochdale, England. Filed Jan. 20, 1943. 3 claims. (Cl. 308-72).

2,355,559. Cover for containers. Frank Renner, assignor to Renner & Company, Chicago, Ill. Filed No. 6, 1940. 5 claims. (Cl. 229-8). A novelty flower pot and the like formed from a plurality of superimposed transparent sheets.

2,355,578. Container. Benjamin M. Williams and Fred L. Rushing, assignors to Gaylord Container Corporation, St. Louis, Mo. Filed April 5, 1943. 12 claims. (Cl. 229-45).

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2,355,665. Hinged cover container. David W. Mabee, assignor to National Folding Box Company, New Haven, Conn. Filed Aug. 5, 1942. 12 claims. (Cl. 229-51).

2,355,673. Apparatus for coating webs. Edward Person, assignor to General Felt Products Inc., Brooklyn, N. Y. Filed July 22, 1940. 4 claims. (Cl. 91-33).

2,355,714. Apparatus for making filters. Augustus H. Eberman, assignor to Jesse B. Hawley, Geneva, Ill. Filed April 4, 1942. 17 claims. (Cl. 92-54). An apparatus for making folded, accreted, fibrous pulp air filters having large facial area in small space.

2,355,729. Container. William H. Inman, assignor to Bloomer Bros. Company, Newark, N. Y. Filed April 15, 1942. 2 claims. (Cl. 229-26).

2,355,730. Leakproof carton. William H. Inman, assignor to Bloomer Bros. Company, Newark, N. Y. Filed May 6, 1943. 2 claims. (Cl. 229-126).

2,355,786. Sealing means for bags. Donald F. Dreher and Howard E. Lanzit, Los Angeles, Calif., assignors of one-fourth each to Wedworth W. Clarke and Raymond R. Lanzit. Filed Dec. 18, 1939. 2 claims. (Cl. 229-62).

2,355,813. Method of logging. Thayer T. May, Garden City, La. Filed Feb. 5, 1944. 8 claims. (Cl. 214-152).

2,355,858. Apparatus for determining the relative porosity of various porous materials. Stuart H. Hahn and Robert H. Judson, assignors to The B. F. Goodrich Company, New York, N. Y. Filed Oct. 17, 1941. 11 claims. (Cl. 73-51).

2,355,953. Method of coating. William L. Craig, assignor to R. T. Vanderbilt Company, Inc., New York, N. Y. Filed May 28, 1942. 4 claims. (Cl. 117-156). The paper is coated with an aqueous medium containing a coating pigment, a starch adhesive and an emulsion of an ester gum, dehydrating the applied film, and breaking the emulsion during dehydration of the coating on the paper.

2,355,999. Process for decorticating ramie and other bast fibers. David E. Patterson, assignor to Bast Fiber Development Corporation, New York, N. Y. Filed July 23, 1941. 2 claims. (Cl. 19-6).

2,356,000. Fiber separating machine (ramie). David E. Patterson, assignor to Bast Fiber Development Corporation, New York, N. Y. Filed Feb. 20, 1941. 1 claim. (Cl. 19-31).

2,356,046. Paper boring and slotting machine. Mark J. Garlick, assignor to The Challenge Machinery Company, Grand Haven, Mich. Filed July 11, 1938. 5 claims. (Cl. 164-86). A machine for forming notched openings in a stack of sheets.

2,356,066. Safety envelope. Oscar V. Lalonde, assignor to Cushman & Denison Manufacturing Company, Inc., New York, N. Y. Filed June 17, 1943. 2 claims. (Cl. 229-80).

2,356,078. Envelope for metallic objects. James E. Myers, assignor to Globe Envelopes Limited, Toronto, Canada. Filed July 15, 1943. 2 claims. (Cl. 229-68). A flexible container for dipping into a liquid while containing an article for treatment by the liquid.

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2,356,194. Paper box. Sterling R. Arner, assignor to Old Dominion Box Company, Lynchburg, Va. Filed July 19, 1943. 2 claims. (Cl. 229-3.5).

2,356,285. Apparatus for washing pulp. Edward T. Street, assignor to Downingtown Manufacturing Company, Downingtown, Pa. Filed May 19, 1938. 3 claims. (Cl. 68-22). A method of washing pulp which consists in forming a board between two belts under light but gradually increasing pressure and washing it in this condition.

2,356,289. Pulp screen. Harold D. Wells, Glens Falls, N. Y. Filed Feb. 17, 1942. 2 claims. (Cl. 68-55). A vertically disposed casing, a stationary cylindrical screen in the casing, an impeller disposed concentric with the screen, a separating basket, etc.

2,356,362. Method of packing sheets of paper. Mauritz O. Stranbergm assignor to Pappercentralen i Stockholm A. B., Stockholm, Sweden. Filed Sept. 23, 1941. 2 claims. (Cl. 206-57). A method of packing sheets of toilet paper.

2,356,489. Apparatus for coating. John O. Amstuz, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Aug. 19, 1939. 12 claims. (Cl. 91-8). An apparatus for depositing comminuted pile-surface firming material upon an adhesively coated backing sheet.

2,356,497. Apparatus for the continuous purification of suspensions or sludges, especially of fibrous pulp of the paper industry. Helmuth Banning, Duren, Germany; vested in the Alien Property Custodian. Filed Aug. 29, 1939. 20 claims. (Cl. 210-68). A rotating drum for purifving pulp.

2,356,555. Beating engine. August Aeldert, Dusseldorf, Germany; vested in the Alien Property Custodian. Filed April 3, 1941. 3 claims. (Cl. 92-24). A beating engine of the overthrow type.

2,356,656. Container and package. George J. Datz, assignor to Pepsi-Cola Company, Long Island City, N. Y. Filed July 12, 1941. 3 claims. (Cl. 224-45).

August 29, 1944

2,356,825. Closure member and method of applying same. Lloyd G. Copeman, assignor to Copeman Laboratories Company, Flint, Mich. Filed Dec. 5, 1939. 17 claims. (Cl. 215-38). A seamless paper cup having pleated side walls and internally coated with an adhesive.

2,356,849. Materials impermeable to ultraviolet radiations. William Horback, assignor to Celanese Corporation of America, New York, N. Y. Filed June 23, 1942. 6 claims. (Cl 88-109). Films, etc. substantially opaque to ultraviolet which contains a substituted benzalacetophenone.

2,356,873. Coating apparatus. Gerald D. Muggleton, assignor to Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis. Filed Jan. 27, 1941. 2 claims. (Cl. 91-33). A method of roll coating a continuous web of paper.

2,356,879. Process of preparing lustrous coatings. Walter Pense, Werner Asch, Phillip May, and Hermann Stärk, Germany; vested in the Alien Property Custodian. Filed Nov. 26, 1940. 2 claims. (Cl. 117-142). Board, vulcanized fiber, etc. are coated with a solution of a salt of the free acid from the interpolymerizate from maleic anhydride and vinyl butyl ether and the impregnated materials are glazed.

2,356,969. Container. Jerome J. Blum, assignor to The Fibre Forming Corporation, Olean, N. Y. Filed May 29, 1942. 7 claims. (Cl. 206-3). A waterproof fibrous container.

2,356,988. Process for the separation of the constituents of tall oil. Frederick H. Gayer and Charles E. Fawkes, assignors to Continental Research Corporation, Chicago Heights, Ill. Filed April 7, 1942. 13 claims. (Cl. 260-97.5). The fatty acids are converted into their alkyl esters, the resin acids substantially neutralized with dilute aqueous alkali (resin acid concentration of from 5 to 30%), the mixture heated to cause separation into two layers and the upper layer of fatty acid esters and unsaponifiable matter recovered.

2,356,009. Carton. Stanley J. Klein, assignor to Empire Box Corporation, Garfield, N. J. Filed Jan. 18, 1943. 2 claims. (Cl. 229-32).

2,357,090. Process of preparing a lignin-phenol-formaldehyde resin dispersion. Gaetano F. D'Alelio, assignor to General Electric Company, Schnectady, N. Y. Filed April 17, 1941. 2 claims. (Cl. 260-17.5). A method of forming a dispersion of a potentially reactive resinous composition from lignin, phenol and formaldehyde.

2,357,091. Dispersion of pine-wood pitch-phenol-formaldehyde resinous reaction products. Gaetano F. D'Alelio, assignor to General Electric Company, Schenectadv, N. Y. Filed April 17, 1941. 4 claims. (Cl. 260-25). A process of preparing a potentially reactive resinous composition from pinewood pitch, phenol, and formaldehyde.

2,357,092. Container. Stanley De Mian and Cecil E. Taylor, assignors to Gaylor Container Corporation, St. Louis, Mo. Filed July 13, 1942. 1 claim. (Cl. 229-5.5). Heavy duty shipping carton.

2,357,093. Container. Stanley De Mian and Cecil E. Taylor, assignors to Gaylord Container Corporation, St. Louis, Mo. Filed Aug. 10, 1942. 1 claim. (Cl. 229-5.5). A shipping carton.

2,357,100. Transparent sheet material and method of making same. Erich Gebauer-Fuelnegg, Louis K. Eilers, and Eugene W. Moffett, assignors to Marbon Corporation, Gary, Ind. Filed April 14, 1933. 8 claims. (Cl. 117-145). A nonfibrous transparent cellulosic material is coated with a moistureproofing composition containing wax and Plioform-type resin.

2,357,124. Stabilization of soil. Abraham B. Miller, assignor to Hercules Powder Company, Wilmington, Del. Filed Aug. 14, 1942. 10 claims. (Cl. 106-123). A mixture of tall oil and a petroleum-hydrocarbon insoluble pine-wood resin in dispersion is used.

2,357,147. Wrapper for bottles or phials. George W. Taylor, Leeds, England. Filed May 24, 1941. 1 claim. (Cl. 229-89).

2,357,155. Container. Benjamin M. Williams and Fred L. Russhing, assignors to Gaylor Container Corporation, St. Louis, Mo. Filed Jan. 18, 1943. 1 claim. (Cl. 229-35).

2,357,161. Paper cup. Cesare Barbieri, assignor to Dixie Cup Company, New York, N. Y. Filed June 12, 1942. 7 claims. (Cl. 229-1.5). A conical paper drinking cup.

2,357,201. Drive for papermaking machines. Lloyd Hornbostel, assignor to Beloit Iron Works, Beloit, Wis. Filed May 8, 1941. 5 claims. (Cl. 92-38). A drive assembly for a drier cylinder and a press roll.

2,357,202. Apparatus for winding web materials. Lloyd Hornbostel, assignor to Beloit Iron Works, Beloit, Wis. Filed July 8, 1942. 24 claims. (Cl. 242-66).

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2,357,316. Apparatus for refining paper stock. Edwin Cowles, assignor to The Cowles Company, Princeton, N. J. Filed May 9, 1941. 8 claims. (Cl. 92-23). A method of passing pulp through an impeller chamber to a screening chamber.

2,357,335. Abrasivesheet material. Joseph H. Kugler and Byron J. Oakes, assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn. Filed Oct. 29, 1938. 15 claims. (Cl. 51-295).

2,357,349. Coating machine. James P. Norton, assignor to United Shoe Machinery Corporation, Flemington, N. J. Filed May 8, 1942. 7 claims. (Cl. 91-18). A machine for applying liquid coating material to flexible sheet material.

2,357,492. Fourdrinier wire. Otto A. Abendroth, Menasha. Wis. Filed June 5, 1943. 4 claims. (Cl. 139-425). One set of wires is of hard metal and the other has a hard metal core and a soft metal casing.

2,357,535. Container fabricating machine. Charles Z. Monroe, assignor to The American Paper Bottle Company, Toledo, Ohio. Filed June 13, 1940. 10 claims. (Cl. 93-44.1).

2,357,577. Adhesive applying means. John M. Brown, assignor to New Jersey Machine Corporation, Hoboken, N. J. Filed March 27, 1940. 13 claims. (Cl. 91-51).

2,357,786. Seal forming mechanism. Franklin H. Wells, assignor to American Machine & Foundry Company, Brooklyn, N. Y. Filed Oct. 18, 1940. 32 claims. (Cl. 93-2). A cooling device for heat-sealed wrappers.

September 12, 1944

2,357,814. Machine for making fiber containers. Henry Einloth, assignor to American Can Company, New York, N. Y. Filed May 3, 1943. 3 claims. (Cl. 93-81). A machine for winding simultaneously a plurality of contiguous fiber container bodies.

2,357,824. Apparatus for coating paper. Gerald Haywood, assignor to West Virginia Pulp and Paper Company, New York, N. Y. Filed April 26, 1940. 4 claims. (Cl. 91-54). A method of roll coating paper.

2,357,842. Container and method of forming same. George A. Moore, assignor to Shellmar Products Company, Mount Vernon, Ohio. Filed July 31, 1940. 8 claims. (Cl. 93-39.1).

2,357,845. Coating machine. Ronald E. J. Nordquist, assignor to American Can Company, New York, N. Y. Filed Sept. 17, 1941. 10 claims. (Cl. 91-51). A machine for applying thermoplastic adhesive in fluid form to web material.

2,357,917. Resin emulsions. Ashworth N. Stull and William L. Abramowitz, assignors to National Oil Products Company, Harrison, N. J. Filed June 13, 1940. 2 claims. (Cl. 106-144). An emulsion of a resinous body in an aqueous emulsion containing solubilized casein as an emulsifier, the predominant ingredient of said resinous body being a hydrogenated ester gum.

2,357,976. Web winding. Oscar C. Roesen, assignor to Wood Newspaper Machinery Corporation, Plainfield, N. J. Filed May 19, 1943. 15 claims. (Cl. 242-56).

2,358,004. Treatment of tall oil. Russell G. Dressler, Middle River, Md., Robert E. Vivian, Los Angeles, Calif., and Torsten Hasselstrom, Savannah, Ga. Filed March 11, 1940. 13 claims. (Cl. 260-97.5). Process of preparing a stable fatty acid compound from tall oil.

2,358,056. Manufacture of paper for photographic purposes. Halford R. Clark, assignor to Eastman Kodak Company, Rochester, N. Y. Filed July 27, 1940. 5 claims. (Cl. 95-8).

2,358,080. Method of pretreating cellulose to prepare it for esterification. Carl J. Malm, assignor to Eastman Kodak Company, Rochester, N. Y. Filed Oct. 30, 1941. 1 claim. (Cl. 260-229). The cellulose is treated with a mixture of propionic and sulphuric acids at about 100° F.

2,358,124. Carton. Julius A. Zinn, Jr., Belmont, Mass. Filed March 19, 1943. 8 claims. (Cl. 229-37).

2,358,125. Bag closure and method of making same. Helmer Anderson, assignor to General Mills, Inc., Minneapolis, Minn. Filed April 5, 1942. 10 claims. (Cl. 93-35).

2,358,140. Waterproofing material and method of making the same. Lloyd F. Bramble, assignor to Trumbull Asphalt Company, Chicago, Ill. Filed May 22, 1939. 2 claims. (Cl. 117-168). A product laminated with asphalt waterproofing composition.

2,358,187. Process of regenerating sodium hydroxide-sodium sulphide cooking liquors. Walter L. Savell, assignor to The Mathieson Alkali Works, Inc., New York, N. Y. Filed Jan. 13, 1942. 4 claims. (Cl. 23-48). A mixture of soda ash and sulphur is maintained in a non-oxidizing atmosphere in a black ash furnace, heated to their reaction temperature, and the reaction products are brought into contact with the burning carbonized residue.

September 19, 1944

R22,547. Adhesive applying and registering mechanism. Edwin G. Staude, assignor to E. G. Staude Manufacturing Company, St. Paul, Minn. Original No. 1,969,106 dated Aug. 7, 1934. Application for reissue June 17, 1944. 44 claims. (Cl. 93-36).

2,358,502. Dispensing carton. Clyde L. Gilbert, assignor to American Coating Mills, Inc., Elkhart, Ind. Filed Nov. 20, 1943. 4 claims. (Cl. 229-9).

2,358,547. Sterile package. Harry F. Waters, New York, N. Y. Filed Nov. 29, 1940. 3 claims. (Cl. 229-14).

2,358,569. Container. James D. Gerahty, New York, N. Y. Filed March 13, 1943. 8 claims. (Cl. 229-5.5).

2,358,614. Shipping container. Joseph B. Arbuthnot, Brentwood, Pa. Filed Nov. 14, 1942. 2 claims. (Cl. 229-23).

2,358,659. Carton having a pouring spout. William A. Ringler, assignor to The Gardner-Richardson Company, Middletown, Ohio. Filed June 5, 1942. 14 claims. (Cl. 229-17).

September 26, 1944

2,358,789. Method of making cartons. Herman A. Carruth, assignor to National Folding Box Company, New Haven, Conn. Filed Feb. 19, 1942. 15 claims. (Cl. 93-49). A carton having a box part and a cover part connected by a connecting paper and formed from a single blank of paperboard.

2,358,790. Captive cover carton. Herman A. Carruth, assignor to National Folding Box Company, New Haven, Conn. Filed Feb. 19, 1942. 14 claims. (Cl. 229-43). An improved paperboard blank for forming a captive cover carton.

2,358,802. Carton or container. Ralph M. Glover, assignor to Box Blank Corporation, New York, N. Y. Filed Oct. 2, 1941. 8 claims. (Cl. 229-43). A carton or container and a captive cover therefor.

2,358,831. Pressure sealing paper tape. Gustave Schieman, assignor to International Plastics Corporation, New York, N. Y. Filed March 26, 1942. 8 claims. (Cl. 117-68.5).

2,358,851. Ink roll structure. Robert G. Chollar, assignor to The National Cash Register Company, Dayton, Ohio. Filed Dec. 29, 1941. 3 claims. (Cl. 91-67.8). An ink supply roll is made of disks of unsized paper, the paper being porous, bulky, and of low finish.

2,358,859. Container. Paul S. Hauton and Joe W. Marlin, assignors to Scripto Manufacturing Company, Atlanta, Ga. Filed Jan. 31, 1942. 16 claims. (Cl. 206-44).

2,358,866. Acid aqueous solutions of chlorites. James D. MacMahon, assignor to The Mathieson Alkali Works, Inc., New York, N. Y. Filed Aug. 13, 1943. 8 claims. (Cl. 252-187). The generation of chlorine dioxide in an acid solution is repressed by the presence of hydrogen peroxide.

2,358,923. Carton. Reynolds Guyer, assignor to Waldorf Paper Products Company, St. Paul, Minn. Filed April 30, 1941. 1 claim. (Cl. 229-45).

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2,358,943. Packing box. George L. Smith, Rock Island, Ill. Filed Nov. 25, 1940. 9 claims. (Cl. 229-38).

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2,359,097. Molded article. Howard M. Elsey, assignor to Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Filed July 17, 1941. 4 claims. (Cl. 154-45.9). The laminated sheets of fibrous material are impregnated with phenolic condensate but have a coating of practically urea-free melamine-aldehyde reaction product.

2,359,172. Circulation system of pulp digesters. Ivan P. Troedsson, Tokyo, Japan; vested in the Alien Property Custodian. Filed May 1, 1940. 2 claims. (Cl. 92-7). A filter in an external circulation system.

2,359,185. Decalcomania. Marcellus E. Wysong, assignor to Gladys H. Wysong, St. Paul, Minn. Filed Aug. 15, 1940. 3 claims. (Cl. 41-33).

2,359,190. Bag. True M. Avery and William H. Bodenkroger, assignors to Union Bag & Paper Corporation, Hudson Falls, N. Y. Filed Jan. 11, 1943. 19 claims. (Cl. 229-58). A bag closure.

2,359,201. Pulp molding die. Merle P. Chaplin and Charles J. Chaplin, assignors to Chaplin Corporation, Portland, Maine. Filed Nov. 27, 1939. 11 claims. (Cl. 92-54).

2,359,250. Wrapping material. Orville K. Schmied, assignor to Reynolds Research Corporation, New York, N. Y. Filed April 12, 1940. 4 claims. (Cl. 154-46). A laminated material of aluminum foil, a paper and an adhesive of 98% asphalt and 2% reclaimed rubber.

2,359,271. Method of making packages. Melvin H. Sidebotham, Newton, Mass., assignor of one-half to Harlow M. Russell. Filed Jan. 14, 1942. 4 claims. (Cl. 93-3). The method of successively making packages with string attached tags.

TAPPI Notes

Joseph Fox is now chemical engineer for the Union Carbide & Carbon Chemical Corporation, Oak Ridge, Tenn.

J. Howard Wright, formerly with the Southland Paper Mills, Inc., is now research engineer for Berst-Forster-Dixfield Company, Plattsburgh, N. Y.

Walter L. Perro, formerly of the Southern Advance Bag & Paper Company, is now assistant pulp mill superintendent for Hollingsworth & Whitney Company, Mobile, Ala.

The Watertown Group of the TAPPI Empire State Section will meet at the Hotel Woodruff, Watertown, N. Y., on Thursday, December 14th at 6:30 P.M. Three representatives of large resin manufacturers will discuss postwar plans.

The Hudson Valley Group of the TAPPI Empire State Section will meet at the Queensbury Hotel, Glens Falls, N. Y., on Friday, December 22nd at 6:30 P.M. Edwin C. Jahn of the New York State College of Forestry will report on pulp and paper developments in Sweden.

The New England Section of the Technical Association of the Pulp and Paper Industry will meet at the Hotel Statler, Boston, Mass., on Friday evening, December 15th at 6:30 P.M. A premeeting gathering will be held from 4 to 6:30 P.M. A program committee consisting of F. A. Strovink, American Cyanamid & Chemical Company, C. H. Child, Merrimac Paper Company and H. T. Barker of Bird & Son, Inc., have prepared an unusually fine panel meeting on the Postwar Competitive Position of Paper. The following will participate in the panel:

Metal Foils—William F. Boyer, Sales Manager, Raynolds Metals Company, Boston, Mass.

Containers—D. G. Magill, Manager, Fibre Can Division, American Can Company, New York, N. Y.

Cellophane—A. F. Wendler, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Building Materials—P. N. Mills, Assistant Manufacturing Manager, Bird & Son, Inc., E. Walpole.

Plastics—Carl Pottenger, Plastics Division, American Cyanamid & Chemical Company, New York.

Plastics—George Alexander, Materials Engineer, General Electric Company, Lynn, Mass.

Rubber (Pliofilm)—Eugene Judd, Goodyear Tire and Rubber Company, Akron, Ohio.

This meeting should be of particular interest to the sales managers and other executives of the industry and of converting plants. Reservations for the dinner should be sent immediately to F. A. Strovink, Hotel Statler, Boston, Mass.

There has been some confusion in the minds of many relative to the TAPPI annual meeting. Although a number of trade associations have cancelled their meetings due to inadequate facilities at the Waldorf the Technical Association will meet at the Commodore Hotel, New York, N. Y., on February 19-22, 1945. Individuals desiring to present papers should write to R. G. Macdonald, secretary of TAPPI, 122 East 42nd street, New York 17, N. Y., without delay.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

J. D. Atkinson, Jr., research chemical engineer, Buckeye Cotton Oil Company Pulp Plant, 2899 Jackson avenue, Memphis, Tenn., a 1935 graduate of Tulane University.

John Ayer, member of the firm of Fay, Spofford & Thorndike, consulting civil engineers, 11 Beacon St., Boston, Mass., a 1905 graduate of the Massachusetts Institute of Technology.

Arthur G. Dreis, technical service engineer, Hercules Powder Company, Kalamazoo, Mich., a 1937 graduate of the Armour Institute.

George A. Harrington, senior industrial fellow, Mellon Institute, Pittsburgh 13, Pa., a 1937 graduate of Northwestern University.

William H. Jennings, manager, Chemical Division, Chesapeake Camp Corporation, Franklin, Va.

D. M. McBean, consulting engineer, 315 Alexander St., Rochester 4, N. Y., a 1923 graduate of Clarkson College.

Clarence S. Metcalf, librarian, Cleveland Public Library, Cleveland 14, Ohio.

Zina A. Wise, vice-president and general manager, Griffith Rubber Mills, 2439 N. W. 22nd avenue, Portland 10, Oregon, a 1921 graduate of Oregon State College.

Research in Color Development

Greatly increased use of color in recent years has been responsible for many improvements in the goods we buy today, said spokesmen for the Interchemical Company at a recent meeting of the National Association of Photo Lithographers.

Much of the credit for advances in the field of color belongs to the research technicians who have been responsible for the development and application of new equipment and new methods for color analysis. A graphic demonstration of the forward strides of research in printing ink colors was made by the International Printing Ink division of Interchemical Corporation at the NAPL Conference. A large exhibit showed life-sized views of the new electron microscope and the G. E. recording spectrophotometer in action, while various examples of presswork testified to the effectiveness of research in developing new formulations and new techniques for better color printing.

It was predicted that further developments of pigments and use of specially designed laboratory equipment for color control will produce many new applications for color in the post-war world.

Kimberly-Clark Moves to San Francisco

The West Coast office of the Kimberly-Clark Corporation is being moved from Los Angeles to San Francisco on November 27. The new address will be: 155 Sansome street, San Francisco 4, Cal.

A Discussion on the Removal of Insoluble Turbine Deposits by Caustic Soda Solutions*

By A. H. Christgau[1]

Abstract

A method of removing insoluble turbine deposits which has been found helpful in reducing turbine outage—namely, washing turbines with caustic soda, is discussed.

Because of the large percentage of makeup water which is required in paper mill steam plants, all of our mills have experienced pluggage of their turbines. This pluggage may be reduced to a certain extent by stabilizing boiler conditions and with careful supervision of the boiler water treatment. However, even the best operation cannot prevent a small amount of carry-over of solids in the steam from the boilers plugging the turbines. These solids are usually a mixture of soluble and insoluble materials. When the turbines are plugged to such an extent that capacity is lowered and stage pressures are increased, the turbines are washed with condensate. The operation is not new and has been described a great deal in literature. It removes the soluble material but does not remove much of the insoluble material. Thus, if the carry-over contains appreciable amounts of insoluble materials, condensate washings will return neither turbine capacities nor stage pressures to normal.

After a number of condensate washings, the amount of insoluble residue remaining in the turbine is so great that a different treatment becomes necessary. At this point the usual procedure up to a year ago was to dismantle the turbine and scrape the blades manually with a specially-shaped instrument. Scraping is a long and tedious job, especially when the deposits are largely of a siliceous nature. It took about 7 days before a 5,000 kilowatt turbine could be put back on the line when cleaned by this method. The scale mentioned above was very hard and consisted of about 85% silica. The turbine was 550 p.s.i. inlet, noncondensing, exhausting at 25 p.s.i. gauge and bleeding at 180 p.s.i. gauge. The deposit was largely in the 180 to 25-pound stage.

The scraping method kept the turbine out of service too long and it was decided to remove insoluble solids by sand blasting. This method cleaned the blades of the turbine mentioned above very effectively in about 8 hours of actual cleaning time. However, it was not judged to be entirely satisfactory because, first, the time of dismantling and erecting the turbine was longer than the paper mill could afford and, second, it was feared that sand might find its way into the turbine's oil system.

Therefore a method was sought whereby all the turbine solids could be removed without dismantling the turbine and a caustic soda solution washing procedure *(1)* was noted which regained lost capacity and restored stage pressure differentials to normal in a fraction of the time required by mechanical cleaning.

The method consists of spraying a 10% caustic solution into the steam at a rate of 2 g.p.m. Steam is throttled to maintain a turbine speed of 100 to 300 r.p.m. depending on the turbine diameter. The caustic is admitted for 10 minutes and is followed by a 10 to 15 minute reaction time during which no caustic is injected and the unit is at rest. This is repeated from two to eight times depending on the size of the unit. A 230 p.s.i., 30,000 kw. condensing unit requiring nine caustic shots was reported; a low pressure turbine of a cross compound unit requiring five; and a 1250 hp. boiler feed pump requiring but two shots. After the caustic injections the turbines are washed with condensate at a rate of about 2 g.p.m. and a turbine speed of 100 to 300 r.p.m. The washing is continued until analyses of the turbine exhaust indicate that all caustic and silica has been removed. The entire procedure of caustic injecting and washing takes between 6 and 13 hours.

Typical of the results of the cleanings is shown on the boiler feed pump.

	First Stage Pressure, p.s.i.	Pump Output, lb. per hr.
Before washing	156	528,000
After washing	90	630,000

In performing this operation Call and Webb make a number of suggestions which include:

1. Care should be taken to prevent the caustic solution from flooding valve packings where the stem extends downward and from flooding packing glands which depend upon steam leaking through close clearance bushings.
2. During the caustic injections, the shell drains should be closed and during the subsequent washing the drains should be opened to the condenser.
3. All turbine and bleed connections should be closed.
4. Excessive rates of temperature changes in the turbine should be avoided.

Three 5,000 kw. turbines have been cleaned with caustic soda after condensate washing was no longer effective, following the procedure as described by Call and Webb except that the turbine was allowed to continue running during the reaction period. Each turbine required about 100 pounds of caustic soda and a total time off the line of about 16 hours. The time factor compared very favorably with the scraping method which took 7 days, and sand blasting which took 2 days. In all cases the stage pressures and capacities returned to normal, e.g., a noncondensing 600 p.s.i. turbine exhausting at 25 p.s.i. and bleeding at 180 p.s.i. could not produce more than 3,800 kw. after condensate washings. After being cleaned with caustic soda, the capacity returned to 5,000 kw. The 25-pound stage pressure of a condensing 180 p.s.i inlet, 25 p.s.i. bleed turbine was 37 p.s.i. gage at a load of 3,250 kw. when running straight condensing. After caustic washing the pressure under similar conditions dropped from 37 to 27 p.s.i.

In short, caustic washing of turbines has been found to be a very satisfactory method of removing insoluble deposits from turbines.

Literature Cited

1. Webb, W. L., and Call, R. G., Removal of water insoluble turbine deposits by caustic washing, ASME Transactions, Oct., 1943.

[1] West Virginia Pulp and Paper Co., New York, N. Y.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 14-17, 1944.

The Nature of the Lignin in Redwood Bark*

By F. E. Brauns[1] and H. F. Lewis[1]

Abstract

Redwood bark is separated commercially by The Pacific Lumber Company of Scotia, California, into two fractions, the "bark fiber" and the "bark dust."

The "bark fiber" is inherently a cellulose fiber. In its raw state, the cellulose appears to be combined with lignin by a linkage which is very resistant to splitting either by caustic soda or by phenol and acid. A part of the lignin appears to be closely related structurally to sprucewood lignin (and to redwood wood lignin). Two other compounds may be associated with the fiber in its raw state—one is a low-methoxyl phenolic acid; the other closely resembles lignin but contains a definite percentage of carboxyl groups. The first of these is readily soluble in alkali, whereas the second is somewhat more difficultly soluble. There is a possibility that these two compounds are merely mixtures of a phenolic acid containing no methoxyl groups whatever with redwood bark lignins but in different ratios.

The bark dust represents a heterogeneous mixture of broken fibers and parenchyma cells, together with a large amount of the phenolic acid found in the fiber. This particular substance probably makes up 70 to 80% of the bark dust. Because of its behavior in the regular lignin analytical method it may appear as lignin in any determination made on redwood bark, thus giving a completely erroneous picture of the lignin content of the redwood bark. The purified product recovered from the bark dust is free of methoxyl groups; it has been shown to possess both phenolic and aliphatic hydroxyl and carboxyl groups. It may be termed a "humic acid."

By far the greatest proportion of research on the nature of lignin has been carried out on the lignin present in wood. The lignins in straw and other forms of agricultural waste have been studied to a somewhat less degree. Very little work has been done on the so-called lignins present in bark. The following investigation deals with the nature of the materials which appear in redwood bark as lignin precipitates when the bark is analyzed for lignin by the conventional acid methods.

An extended botanical description of the bark has been published by Isenberg *(1)* and no attempt will be made, therefore, to restate the details. It is enough to say that the bark as it is separated and converted by the Pacific Lumber Company is a complex tissue made up of a number of cell types, including sieve tubes, phloem parenchyma, phloem fiber (better known as the redwood bark fiber), and phloem ray parenchyma, as well as cork cells formed when the cells of the phellogen layer mature. When the tissues die, the thin-walled sieve cells and parenchyma cells compress and distort, while the fibers remain essentially the same in shape and composition. More than 25% of the weight of the dead bark represents fiber, which is in contrast to the very much smaller percentage (by weight) of fiber in the living bark. The cork cells appear to be partially filled with a dark, reddish-brown, alkali-soluble material which will be described later in the discussion on bark lignins. The same material also appears within the ray cells of the outer bark and as a thin deposit on the walls of the other cells in the dead outer bark.

A chemical investigation of the various cell types is almost impossible because, in any structure as complex as the bark of the redwood, a clear-cut physical separation of the various types of cells is almost impossible. In the dead bark the possibility is even less because, with the exception of the bark fiber and the cork cells, the cell structures no longer show any tendency to stay together and the materials forming the walls, together with the reddish compounds lining them, separate when the bark is run between milling rolls to form an amorphous powdery substance termed by the redwood lumberman "bark dust" or "bark sand," a term sometimes used in patent literature.

In the following investigation, the lignin materials in the bark dust and in the bark fibers which had been separated from the dust have been studied. There are at least two rather distinct types of substances present in the bark which appear as lignin when the bark is treated with acid in the usual lignin determination. The first is a high molecular weight phenolic acid which appears to have both alcohol hydroxyls and phenol hydroxyls as well as carboxyl groups. The second is a true lignin-type compound, part of which may be closely associated with the cellulose component of the bark fiber (at least it is very difficult to remove by the ordinary processes of delignification). A third product which has been isolated and studied may possibly be a mixture of these two.

In the following investigation, the "fiber lignin" and "dust lignin" were investigated separately.

Characterization of the Redwood Bark Fiber Lignin and High Molecular Weight Organic Acids

Because there is a relatively large background of information in the literature regarding alkali lignin, the alkali cooking process was used to separate lignin and the high molecular weight organic acids from the fibrous cellulose. Following the cook, the resulting alkali black liquor was acidified, which precipitated the dissolved bark alkali lignin and acids. After purification, these were characterized by determining their alcoholic and phenolic hydroxyls and carboxyl groups. The lignin remaining in the pulp was condensed with phenol and the product studied in the same way.

Before the solutions for lignin isolation were prepared, a number of cooks was made with the bark fiber. Two of these (I and II in Table I) were made by cooking with alkali directly, a third (III) represented a recook of the pulp of Cook I, a fourth (IV) was an alkaline cook following prechlorination, a fifth (V) an alkaline cook of alcohol-extracted bark fiber, and the sixth (VI) was a sulphite cook. The cooking conditions, yields, and characterization of the pulps are given in Table I.

A preliminary cook was made to study the pulping characteristics of the bark fiber, using the conditions for Cook I in Table I. The raw pulp was screened

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[1] Member TAPPI; Research Associate, The Institute of Paper Chemistry, Appleton, Wis.

with the laboratory size Valley screen. The washed pulp was analyzed by the conventional methods, the results of which are summarized in Table II.

The pulp was bleached with hypochlorite and swelling experiments were carried out on the bleached fibers with cuprammonium solution. The swelling behavior proved to be identical with that of bleached wood fibers, suggesting a somewhat similar ultimate fiber structure.

TABLE I.—CHEMICAL DATA ON THE REDWOOD BARK FIBER COOK

Cook Number	Original Fiber	Soda Cooks					Sulphite Cook
		I	II	III	IV	V	VI
Pretreatment		None	None	Recook of I	Prechlorination	Alcohol-extracted	
Cooking conditions							
Temperature(°C.)		160	180	160	160	160	135
Time, hr.		1	1.5	1	1	1	5
NaOH, %		10	20	22	14	12.5	*
Pulp yield, %....	100	50.7	41.3	96.5	42.2	65.5	51.0
Screenings, %...		9.1	1.6	...	5.0	8.6	17.0
Lignin in pulp, %.	41.8	31.9	21.6	28.1	25.4	30.9	31.8
OCH_3 in lignin, %	10.0	14.3	14.0	14.6	...	...	10.4

* Commercial sulphite liquor with 5.8% total and 4.5% free SO_2.

It should be emphasized that these values are largely empirical. "Bark lignin" and "bark alpha-cellulose" might differ considerably from the wood analogues. The particular point of interest is the large percentage of alpha-cellulose in the C. & B. cellulose and the extremely low viscosity of this fraction.

TABLE II.—CHEMICAL CONSTANTS OF COOKED BARK FIBER PULP

C. & B. cellulose, %	66.2
Apparent alpha-cellulose in pulp, %	95.9
"Lignin" in alpha-cellulose, %	30.3
Alpha-cellulose corrected for lignin, %.....	65.6
Alpha-cellulose in C. & B. cellulose, %	89.6
C. & B. cellulose viscosity, centipoises	3.1
Lignin in pulp, %	31.1
Methoxyl in lignin, %	13.5
Permanganate number of pulp	54.1
Chlorine consumption of pulp	36.3

Of further interest in connection with the pulping studies is the very great resistance of the residual lignin in the pulp to delignification by the alkaline pulping solutions. This is seen in the very slight pulping action on recooking Pulp I. The yield of pulp in Cook III was 96.5% of Pulp I, and this pulp still had a lignin content of 28.1%. This lignin had a methoxyl of 14.6%, almost identical with the methoxyl content of redwood alkali lignin. Apparently there exists a very stable lignin-carbohydrate linkage in redwood bark, a linkage which will resist delignification by both the soda and sulphite processes. This type of linkage is different from that present in the wood.

Two of the black liquors were further investigated. The one from the recook of Cook I contained a less alkali-soluble lignin, because the more soluble lignin would have been removed in the first cook. The second was the black liquor from the alcohol-extracted fiber (Cook V). In the latter case, the material in the black liquor would represent the more soluble "lignin," because the alcohol extraction removes only about 3% of the total fiber content.

The processes followed with each black liquor were approximately the same; therefore, only the operations used in the treatment of the No. III black liquor will be described in detail.

"Lignin" was isolated from the black liquor by acidifying with a slight excess of hydrochloric acid; the brown, flocculent precipitate was centrifuged, washed with distilled water and as much water as possible removed by filtration on a Büchner funnel. The moist precipitate was then dialyzed towards distilled water until the precipitate appeared to be free of hydrochloric acid (5 to 7 days). As the electrolytes were removed, a portion of the lignin formed a colloidal solution; hence, it was necessary to recentrifuge the lignin suspension. The supernatant aqueous solution was evaporated under reduced pressure, and the residual lignin dissolved in dioxane and added to the dioxane solution of the main portion of the lignin.

"Lignin" was isolated from the dark red-brown dioxane solution, after drying over sodium sulphate, by dropping the solution into ether, with vigorous stirring. The product separated as a brown, finely divided powder which was washed several times with dry ether and petroleum ether, and finally dried under reduced pressure at 100° C. The average methoxyl content of the precipitated lignin was 11.6%. Spruce alkali lignin prepared in exactly the same manner contains 14.9% methoxyl.

The alkali-insoluble redwood bark lignin remaining in the pulp after the alkaline cook was separated by the action of 72% sulphuric acid and contained 14.3% methoxyl. It would appear that either some methoxyl splits off during the alkali cook and the partly demethylated lignin thus formed goes into solution or that there are at least two lignins differing from each other in methoxyl content.

The lignin in the waste liquor of Cook V was similarly isolated but was purified by dropping its solution in anhydrous pyridine into anhydrous ether. The methoxyl content of this product was 2.7%, indicating the presence in the bark fiber of a relatively large amount of material with a low methoxyl content which is easily removed by the alkaline cooking liquor.

These experiments demonstrate that a mixture of substances is present in the bark fiber which may appear as lignin in the analysis; one is similar to sprucewood lignin as measured by its methoxyl content; a second appears to have one less methoxyl than the first, whereas the third has very little methoxyl and is much more soluble in alkaline solutions and, hence, is much more acidic. The products were purified from any contaminating carbohydrates by dissolving in dioxane, in which the carbohydrates are insoluble, and pouring the dioxane solution into ether, thus precipitating the lignin.

The lignins from the black liquors of Cooks III and V were methylated with diazomethane and dimethyl sulphate and acetylated with acetic anhydride in pyridine. Diazomethane in ether methylates only the acidic hydroxyls (such as the phenolic or carboxylic hydroxyls); dimethyl sulphate with caustic methylates all hydroxyls except those whose methyl derivatives are saponified by the caustic solution (the carboxylic hydroxyls); acetic anhydride in pyridine reacts with all phenolic and alcoholic hydroxyls. By carrying out the appropriate calculations, it is possible to determine the percentage of the different types of hydroxyls in a "lignin" derivative and, hence, to characterize it.

ACETYLATION OF THE ALKALI "LIGNIN" FROM COOK III. Spruce alkali lignin contains hydroxyl groups which may be acetylated. The acetyl and the methoxyl contents of the product are 22.0 and 12.1%, respectively. Acetylation of the alkali "lignin" from Cook III, using Brauns' method *(2)*, gave a product with an acetyl content of 19.5% and a methoxyl content of 9.7%.

METHYLATION WITH DIAZOMETHANE. The purified lignin was methylated in dioxane with diazomethane by the method of Brauns *(2)*. The diazo-

methane-methylated product had a light yellow color, was insoluble in sodium hydroxide, and had a methoxyl content of 22.6%. Diazomethane-methylated spruce alkali lignin has a methoxyl content of 22.2%.

METHYLATION OF THE "LIGNIN" WITH DIMETHYL SULPHATE AND CAUSTIC. Spruce wood alkali lignin may be methylated with dimethyl sulphate and caustic to a methoxyl value of 31.5%. Methylation of redwood bark alkali "lignin," using Brauns' procedure, gave a product which was insoluble in water but soluble in sodium hydroxide solution, indicating the presence of free carboxyl groups. The methoxyl content was 26.0%, in contrast to 31.5% for the analogous sprucewood alkali lignin derivative.

METHYLATION OF THE DIMETHYL SULPHATE-METHYLATED PRODUCT WITH DIAZOMETHANE. Since free carboxyls were indicated, this dimethyl sulphate-methylated product was further methylated with diazomethane to a constant methoxyl content. An orange-colored product resulted having a methoxyl content of 29.5%, substantiating the presence of carboxyl groups.

A comparison of the methoxyl values for the "lignins" from Cooks III and V—with those of sprucewood alkali lignin is given in Table III.

TABLE III.—COMPARISON OF METHOXYL CONTENTS OF DERIVATIVES OF THE "LIGNIN" FROM THE BLACK LIQUOR OF COOKS III AND V AND SPRUCEWOOD ALKALI LIGNIN

	"Lignin" from Cook III Methoxyl, %	"Lignin" from Cook V Methoxyl, %	Sprucewood Alkali Lignin Methoxyl, %
1. Lignin	11.6	2.7	14.9
2. Acetylated "lignin"	9.7	2.2	12.1
3. (1) methylated with diazomethane	22.6	23.6	22.2
4. (1) methylated with dimethyl sulphate	26.0	19.6	31.4
5. (4) methylated with diazomethane	29.5	27.4	31.5
Acetyl content of (2)	19.5	19.8	22.0

By a series of calculations from these data, it is possible to determine the percentage of methoxyl reacting with phenolic hydroxyls, alcoholic hydroxyls, and carboxyl groups (Table IV). As an illustration of the method, let us consider the data on the "lignin" from Cook III. The alkali "lignin" contains 11.6% methoxyl *(A)*. When methylated with diazomethane, this increases to 22.6% *(B)*. The difference between the two values *(B-A)* is 11.0% *(F)*, and represents the methoxyl introduced on phenolic hydroxyl and carboxyl groups. The total methoxyl combined with the carboxyl group is determined by subtracting *(D)*

TABLE IV.—DISTRIBUTION OF METHOXYL GROUPS INTRODUCED IN THE VARIOUS "LIGNIN" DERIVATIVES

	"Lignin" from Cook III	"Lignin" from Cook V	Sprucewood
Methoxyl in alkali lignin (*A*), %	11.6	2.7	14.9
Methoxyl in diazomethane-methylated lignin (*B*), %	22.6	23.5	22.2
Methoxyl in dimethyl sulphate-methylated lignin (*D*), %	26.0	19.6	31.4
Methoxyl in dimethyl sulphate- and diazomethane-methylated lignin (*E*), %	29.5	27.4	31.5
Methoxyl due to methylation of phenolic acid and carboxyl (*F*), %	11.0	20.8	7.3
Distribution of Added Methoxyl Groups (%)			
Methoxyl due to carboxyl (*E-D*) (*G*)	3.5	7.8	0.1
Methoxyl due to phenolic hydroxyl (*F-G*) (*H*)	7.5	13.0	6.6
Methoxyl due to alcoholic hydroxyl (*D-A*)-(*H*) (*I*)	6.9	3.9	9.9

from *(E)*; this gives 3.5% methoxyl *(G)*. The difference between *(F)* and *(G)* is 7.5% *(H)*, which represents the methoxyl present on the phenolic hydroxyls. Finally, the increase in methoxyls due to methylation of alcoholic hydroxyls may be estimated by subtracting *(H)* from the difference between *(D)* and *(A)* (26.0 — 11.6 = 14.4%), which gives 6.9%.

From these figures, calculations may also be made of the percentage (calculated on the lignin) of the various types of free hydroxyl groups in the lignin before methylation (Table V).

TABLE V.—FREE CARBOXYL AND PHENOLIC AND ALCOHOLIC HYDROXYLS IN REDWOOD BARK ALKALI LIGNIN AND SPRUCE ALKALI LIGNIN

	Lignin from Cook III	Lignin from Cook V	Sprucewood Alkali Lignin
Methoxyl groups, %	11.6	2.7	14.9
Carboxyl groups, %	2.0	4.4	0.4
Phenolic groups, %	4.2	7.8	3.6
Alcoholic groups, %	3.9	2.1	5.5

The data from which the calculations on sprucewood alkali lignin have been made were reported by Marshall, Brauns, and Hibbert *(3)*.

It is quite apparent from the above that there are at least two types of materials in redwood bark fiber which dissolve in the alkaline cooking liquor and which appear by analysis as lignin and that these are significantly different from the alkali lignin from sprucewood. One of these, the product dissolving first and almost completely in the alkaline cooking reagent used with Cook V is present in the fiber in large amounts. It contains little if any methoxyl but significant percentages of free carboxyl and phenolic hydroxyl groups. It is easily soluble in dilute alkaline solutions, as are its derivatives in which all alcoholic and phenolic hydroxyls are methylated. The second is the product dissolved when the once cooked pulp is recooked (III). Assuming the removal of the acid in the first cook, a product is found in the black liquor of the recook which still appears to contain a certain amount of carboxyl groups and possibly a somewhat smaller methoxyl content than the original lignin.

It appears that two phenolic acids have been removed, one containing approximately twice the number of phenolic hydroxyl and carboxyl groups as the other and at the same time with only half the number of alcoholic hydroxyls. This tentative interpretation of the calculations is not completely warranted by the facts. Suffice it to say that redwood bark fibers contain large quantities of high molecular weight phenolic acids somewhat related to lignin. These acids resemble humic acids in many ways. They are not present in the living bark but are present in the parenchyma and cork cells of the dead bark and appear to fill the latter. They are also present on the surface of the cell walls of the bark fiber. There is also evidence for the existence of a substance more closely related to lignin, possibly containing small amounts of carboxyl groups. One explanation for these compounds is that the first is a mixture of lignins with a small amount of methoxyl-free humic acid while the second is a mixture of the humic acid with a small amount of lignin.

The Nature of the Resistant Redwood Bark Fiber Lignin

In addition to the products studied above there remains in the bark pulp a relatively large amount of material which can be isolated as lignin in the Klason lignin determination with 72% sulphuric acid. This residual lignin contains 14.3% methoxyl—i.e., in the range of 14 to 15% generally obtained for the methoxyl content of softwood alkali lignins.

An extensive investigation has been made of this lignin. For some reason, it is not easily removed from the fiber by either the soda or sulphite process, but it does combine with phenol in much the same way as spruce lignin. It may be concluded that ether-insoluble bark phenol lignin is much the same as ether-

insoluble spruce phenol lignin. The proof of this statement will follow.

The phenol lignins were made by mixing 20 grams of the pulp with 150 grams of phenol and 1 ml. of concentrated hydrochloric acid and heating on a water bath to 90 to 95°C. The reaction starts almost at once with sprucewood meal but with redwood bark pulp a much longer time is required. When the reaction is complete, the excess phenol is recovered by distillation at a reduced pressure. The residual tar is extracted with a 1:1 mixture of acetone and methanol, in which the phenol lignin dissolves but in which the carbohydrates are almost insoluble, and the solution is centrifuged; the pulp may be further extracted in a Soxhlet until colorless (indicating that most of the phenol lignin has been removed). Even then, the white pulp turns brown on drying in the air. Analysis showed that the pulp still contained 8% lignin (probably combined with phenol), with a methoxyl content of 10.2%.

The difficulty of removing the phenol lignin suggests again the probability that the lignin in the bark fiber is combined in some form of stable chemical union with the carbohydrate constituent of the fiber. Such a bonding is much more stable than similar linkages in wood.

The dark acetone-methanol solution of bark phenol lignin was evaporated, the phenol present removed by distillation, the residue taken up in acetone-methanol and precipitated by dropping the solution into 2 liters of distilled water containing 1 gram of sodium sulphate. The phenol bark lignin was recovered as a flocky precipitate in a yield of 22.5% (on the basis of the pulp).

The crude phenol bark lignin was then separated (using the techniques employed with spruce phenol lignin) into an ether-insoluble and an ether-soluble fraction. Approximately two-thirds of the phenol lignin is insoluble in ether. The ether-insoluble phenol lignin was then methylated according to the techniques described earlier; the ether-soluble phenol lignin was methylated only with diazomethane. The analytical values of the products are given in Table VI.

TABLE VI.—COMPARISON OF THE METHOXYL CONTENTS OF THE VARIOUS PHENOL LIGNIN DERIVATIVES FROM RESISTANT BARK PHENOL LIGNIN AND SPRUCEWOOD PHENOL LIGNIN

	Bark Pulp Alkali Phenol Lignin %	Spruce Phenol Lignin %	Spruce Alkali Phenol Lignin %
1. Crude phenol lignin	9.0	6.8	...
Ether-Insoluble Phenol Lignin			
2. Phenol lignin	11.1	10.3	13.0
3. Phenol lignin, acetylated	9.1	7.9	10.3
4. Phenol lignin, methylated with diazomethane	21.0	21.6	25.6
5. (4) methylated with dimethyl sulphate	27.3	28.2	30.4
6. (5) methylated with diazomethane	27.7	28.4	...
Acetyl value of (3)	22.1	23.1	...
Ether-Soluble Phenol Lignin			
7. Phenol lignin	6.9	...	5.3
8. Phenol lignin, methylated with diazomethane	20.5	...	22.8
9. (7) acetylated	20.0	...	21.5

The ether-insoluble bark phenol lignin closely resembles the ether-insoluble spruce phenol lignin; the ether-soluble bark phenol lignin is more like the spruce alkali ether-soluble phenol lignin.

These values have been recalculated to indicate the distribution of the methoxyls introduced among alcohol and phenol hydroxyls and carboxyls. The data are included in Table VII.

TABLE VII.—DISTRIBUTION OF METHOXYL GROUPS INTRODUCED INTO THE PHENOL LIGNIN BETWEEN PHENOLIC AND ALCOHOLIC HYDROXYLS AND CARBOXYLS

	Redwood Bark Pulp Phenol Lignin		Sprucewood Phenol Lignin	
	Ether Insoluble	Ether Soluble	Ether Insoluble	Ether Soluble
A. Methoxyl in diazomethane-methylated phenol lignin	21.0	20.5	21.6	22.8
B. Methoxyl in phenol lignin	11.1	6.8	10.3	5.3
C. Methoxyl due to methylation of phenolic OH and COOH	9.9	13.7	11.3	17.5
D. Methoxyl in diazomethane, dimethyl sulphate-methylated phenol lignin	27.7	...	28.4	...
E. Methoxyl in dimethyl sulphate-methylated phenol lignin	27.3	...	28.2	...
F. Methoxyl due to COOH ($D - E$)	0.4	...	0.2	...
G. Methoxyl due to phenolic OH ($C - F$)	9.5	...	11.1	...
H. Methoxyl due to aliphatic OH (($D - B$) $- G$)	7.1	...	7.0	...

These values for methoxyls have been calculated as percentages of hydroxyls in the ether-insoluble alkali phenol lignin (Table VIII).

TABLE VIII.—DISTRIBUTION OF HYDROXYLS IN THE ETHER-INSOLUBLE PHENOL LIGNIN FROM REDWOOD BARK PULP AND SPRUCEWOOD

	Redwood Bark Pulp %	Sprucewood %
Phenolic hydroxyls	5.4	6.4
Alcoholic hydroxyls	4.0	4.0
Carboxyls	0.2	0.1
Methoxyls	11.1	10.3
Free hydroxyls covered by the methoxyls	6.4	5.9
Total free and potential hydroxyls in phenol lignin	15.8	15.3
Percentage of these methylated	40.6	38.5

As far as these methods for indicating structural relationships in the lignin field permit, it may be concluded that a large part of the residual lignin in redwood bark pulp is quite similar to the lignin in sprucewood. At least the above values for the ether-insoluble phenol lignin appear to be checks within experimental error. It should be noted that the method will not differentiate between isomeric or polymeric compounds. Later work carried on with redwood lignin showed close checks between spruce and redwood lignins; hence, we may conclude that at least a portion of the lignin in the bark is quite similar to the lignin in the wood.

The quantities of the various derivatives described above may be roughly estimated from the pulp studies. In Cook I, in which the original fiber is cooked with caustic, the "lignin" which dissolves at first proved to be to a large extent the low methoxyl acid material. Of the original 41.8 grams of "lignin" per 100 grams of bark fiber, only 16.2 grams remain in the pulp (Cook I); 25.6 grams or about 60% have dissolved in the alkaline liquor. After Cook III, 13.7 grams of the original lignin remain in the pulp; hence, 2.5 grams or 6.0% have dissolved. This lignin was found to have a somewhat smaller percentage of methoxyl than the regular alkali sprucewood lignin. To these "lignins" may be added; (1) normal lignin, represented by the lignin which combines with phenol to form an ether-insoluble phenol lignin closely analogous to sprucewood phenol lignin; (2) resistant lignin remaining in the fiber even after the alkali cook and the phenol condensation; and (3) soluble phenol lignin derivatives removed as water-soluble compounds when the crude lignin derivatives are precipitated from their alkaline aqueous solutions or when the crude phenol lignin is precipitated by water.

The bark fiber pulp after the two alkaline extractions (III) contained 13.7 grams of residual lignin This was extracted with phenol. From the original 48.9 grams of pulp, 11 grams of phenol lignin were obtained, of which two-thirds was ether-insoluble phenol lignin containing approximately 75% lignin or

5.5 grams. Similarly the 3.7 grams of ether-soluble phenol lignin are only about one-third lignin or about 1.2 grams. Thus the 13.7 grams of "lignin" remaining in the pulp contain 5.5 grams of lignin forming ether-insoluble phenol lignin and 1.2 grams forming ether-soluble phenol lignin or a total of 6.7 grams.

The residue from the phenol extraction weighs 34.2 grams. It is largely cellulose, but it still contains 8.0% or 2.7 grams of a lignin very resistant to alkali and phenol delignification. The sum of the normal lignin (6.7 grams) and resistant lignin (2.7 grams) amounts to 9.4 grams. The 48.9 grams of pulp contained 13.7 grams of material testing as lignin; hence, the difference (4.3 grams) remains to be accounted for; it may have remained in the aqueous solution on precipitation of the crude phenol lignin into water or changed by the action of phenol into a material no longer appearing as "lignin" by analysis.

Bark Dust

Composition of Bark Dust

Fifty per cent of the bark as separated commercially is recovered in the operation as a dust. It is made up of broken fibers, small cells, and the powdered walls of dead parenchyma cells and sieve cells, together with the dried contents of these and the cork cells. Figure 1 is a photomicrograph (30X) of a typical "bark dust" field. Inasmuch as the origin of the dust is much the same as that of a portion of the "bark fiber," we might expect dust and fiber to contain similar components.

Eighty-eight per cent of the dust dissolved quickly in 4% caustic at 160° C.; the solution gave no precipitate with carbon dioxide, which is in direct contrast to the behavior of wood lignin in alkaline black liquors. On acidification with hydrochloric acid, a voluminous brown precipitate was formed. Thus the dust contains a product which behaves in much the same manner as the material dissolved from the bark fiber by the cooking liquor in Cook V. The methoxyl content of the dust was only 0.08%. The "lignin" content of the dust by analysis with 72% sulphuric acid was 60%. This "lignin" differed from the residual bark lignin in that it did not react with phenol in the presence of acid catalysts.

In view of the probable relation between the material in the dust and reacting as lignin and that portion of the fiber dissolved as lignin in Cook V, an attempt was made to isolate and purify the alkali-soluble material reacting as "lignin" in the bark. The dust was extracted by cooking under pressure at 110° C. with three separate charges of 1% sodium hydroxide for 1 hour. The "acid lignin" was precipitated from the alkaline solution by acidifying with hydrochloric acid. The precipitate was removed in the centrifuge and the inorganic content was dialysed against distilled water. As the excess hydrochloric acid was removed, the "acid lignin" formed a colloidal solution; at this point the product was filtered by suction as dry as possible, and the remaining water removed on a porous plate. The product was dissolved in dioxane and the dried solution in dioxane was concentrated under reduced pressure and poured into ether. The precipitate (a dark brown powder) was washed with dry ether and petroleum ether and dried in a desiccator.

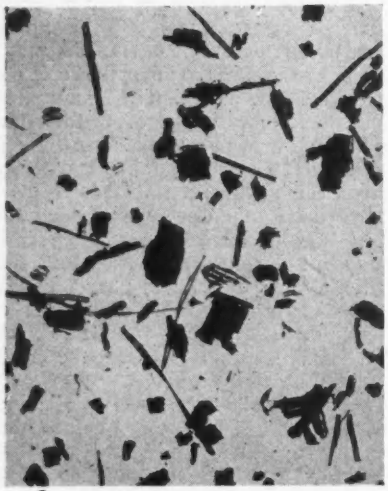

FIG. 1
Redwood Bark Dust

Such "acid-lignin" still has an ash content of 0.81%. The "lignin" contained 57.1% carbon and 5.0% hydrogen. The yield of the purified product (calculated on the bark dust) was 22.5%. The low yield results from incomplete precipitation with acid and the difficulty in handling the product. This "acid lignin" as recovered is representative of at least half of the "lignin" compounds in the bark.

The purified product was then methylated by the methods used for bark fiber lignin, the results of which are shown in Table IX.

TABLE IX.—METHOXYL VALUES OF THE PURIFIED AND METHYLATED "ACID LIGNIN" FROM BARK DUST

	Lignin from Cook V	Bark Dust "Acid Lignin"
Methoxyl in alkali lignin (A)	2.7	0
Methoxyl in diazomethane-methylated lignin (B)	23.5	23.3
Methoxyl in dimethyl sulphate- and diazomethane-methylated lignin (E)	27.4	29.9
Methoxyl in dimethyl sulphate methylated lignin (D)	19.6	22.3
Methoxyl due to methylation of phenolic OH and carboxyl (B —A) (F)	20.8	23.3
Methoxyl on carboxly (E —D) (G)	7.8	7.6
Methoxyl on phenolic OH (F—G) (H)	13.0	15.7
Methoxyl on alcoholic OH ((D —A) —H) (I)	3.9	6.6

It is apparent from the preceding data that the purified "acid lignin" is somewhat related to the crude "lignin" removed from the bark fiber in Cook V. It may be considered as a high molecular weight phenolic acid having alcoholic and phenolic hydroxyl groups.

It must be kept in mind that, with a natural product of this type, we are not dealing with a uniform, chemically pure compound but rather with a polymerized product, which probably is changed in composition during isolation. In view of this, it is impossible to say much about a building unit or molecule size. Similarly, we cannot say too much about definite numbers of reactive groups. The data permit our assuming a ratio of aliphatic hydroxyls, phenolic hydroxyls, and carboxyls of 2:4:3 and from this ratio we can establish as minimum molecular weights, a value of 750 from the aliphatic hydroxyls, 835 from the phenolic hydroxyls, and 1000 from the carboxyls. These values are in the range assumed for alkali spruce lignin.

Although a number of reactions has been carried out relating to possible uses of purified "acid lignin" and the bark dust, space will not permit their discussion in this report. Rather they will be made the subject for a later paper.

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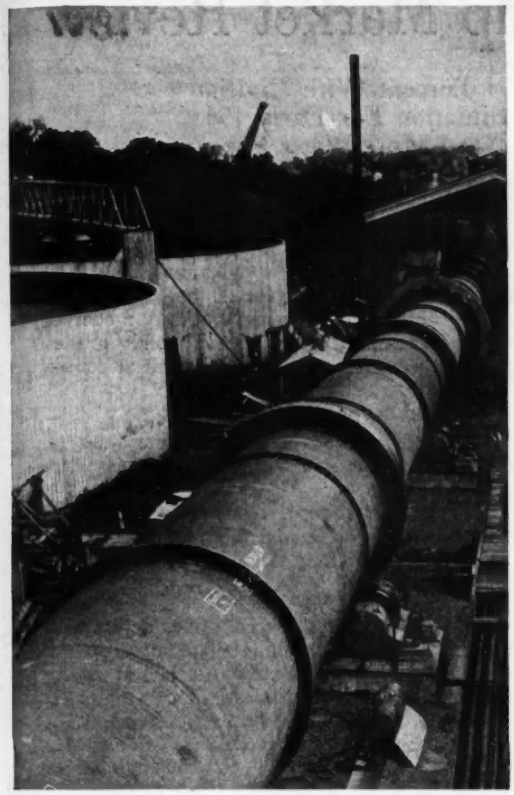

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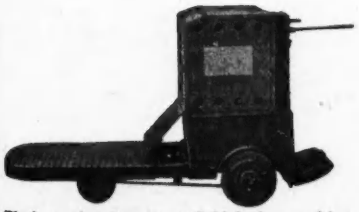

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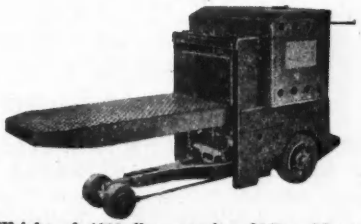

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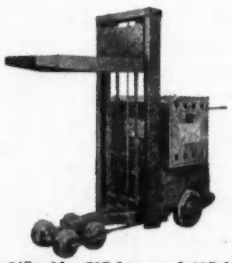

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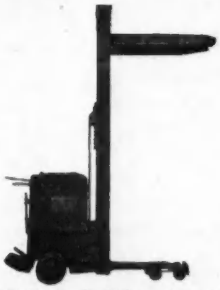

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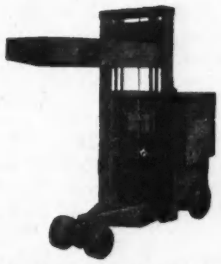

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New York Paper and Pulp Market Review

Paper Output Continues High At Over 91 Percent With Civilian Uses Only Partly Satisfied—Wood Pulp Situation For Early 1945 Appears Improved—Rags Active—Mills Need More Waste Paper.

Office of the PAPER TRADE JOURNAL,
Wednesday, November 29, 1944.

Restriction of paper for civilian use is being felt more acutely. As the war enters its final phase in Europe industry and trade are eager to put into effect plans prepared for the post-war period. To do this a substantial quantity of paper for advertising purposes is required. Latest government reports, however, are not very encouraging at the prospect of more paper for commercial use during the next few months. Estimates of all-over government requirements indicate the expectation of less and not more paper for non-military consumption. Many reports received this week from manufacturers' representatives, jobbers, and general paper merchants reflect the difficulties of supplying even a relatively small part of customers' needs. More paper and paper products are needed than can be produced under present operating conditions. Considering the extraordinary heavy demand and serious handicap of mill labor, the paper industry maintains a noteworthy record in its present high output.

The index of general business activity for the week ended November 18 rose to 142.3, from 140.7 for the previous week, compared with 145.5 for the corresponding week last year. Paper board production was 153.9, compared with 155.3 for the preceding week, and with 143.7 for the like period in 1943.

Paper production for the week ended November 18 was estimated at 91.7%, compared with 91.4% for 1943, with 86.9% for 1942, with 105.3% for 1941, and with 84.7% for the corresponding week for -940.

Paper board production for the week ended November 18 was 96.0%, compared with 94.0% for 1943, with 83.0% for 1942, with 96.0% for 1941, and with 77.0% for the corresponding week in 1940.

Newsprint shipments from Canada to the United States will be maintained at the rate of 1944, which is 200,000 tons monthly, a late report states.

Pulpwood

Pulpwood exports from Canada in 1945 will be a minimum of 1,250,000 cords, a WPB report states. Pulpwood receipts at U. S. mills in October aggregated 1,319,000 cords, which is 5% under receipts for October 1943. Total domestic receipts were 1,155,500 cords, with 163,000 cords imported. Receipts of domestic cut pulpwood were 6% under October 1943. The WPB states that the greatest factor affecting the volume of pulpwood production in the Northeastern States continues to be lack of manpower.

Wood Pulp

As the pulpwood supply at the end of the third quarter is better than was anticipated earlier in the year, the domestic goal of 14,000,000 cords for the full 1944 year will be exceeded, the Department of Commerce reports. This excellent cut of wood is expected to be sufficient to maintain wood pulp production at or better than the output in August, which totaled 888,000 tons.

Rags

Mill demand for new cotton rags is reported active this week. All papermaking grades are in steady demand. Prices are at ceiling levels.

Buying of old cotton rags is reported moderate to good. An increased tonnage in the roofing grades is reported at this date. All prices are firm at ceiling levels.

Old Rope and Bagging

Mill demand is active for the higher grades of fiber, with Manila rope scarce in relation to essential and urgent needs.

Trading in scrap bagging is reported little changed this week. Volume is light and the demand narrow. Prices are soft and continue nominal.

Old Waste Paper

Mill demand for paper stock continues active with some mills in urgent need of immediate supplies. All grades of waste paper are quickly absorbed at ceiling prices. The inventory trend of waste fibrous materials continues upward. Increased collections of waste paper in the future are expected to follow the cooperative efforts of the U. S. Department of Education and the U. S. Victory Paper Campaign Committee. A "paper-trooper" program, organized for more than 85% of the nation's schools, is expected to give substantial aid to the maintenance of maximum collections.

Twine

Demand has been active for twine this fall, with great difficulty experienced to provide sufficient tying grades to meet trade requirements. The recent easing of some istle restrictions has provided some relief. Prices are firm.

Geo. Olmsted, Jr., Speaks on Paper

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 27, 1944—George Olmstead, Jr., president of S. D. Warren Company, gave an informative and interesting address on "Paper—The Critical Problem" at the regular meeting of The Bookbuilders of Boston at the Hotel Lenox, November 21. For the last two years, Mr. Olmstead has been consultant and advisor to both the War Production Board and the Office of Price Administration. He is chairman of the OPA Advisory Committee for the Book Paper Industry.

President Edwin L. Morss, of Ginn & Company, opened the meeting and Philip E. Hinckley, secretary and in charge of the Book Publishing Division of the S. D. Warren Company, presented Mr. Olmstead, after noting that paper had become a critical item and important to the economy of the world.

Others at the head table included Benjamin Van Wyck, director, S. D. Warren Company; Amor Hollingsworth, president, Tileston & Hollingsworth Company; William N. Stetson, president, Storrs & Bement Company, and A. Lehne Hartzell, in charge of the Book Publishing Division of the Mead Sales Company. Fifty-eight were present.

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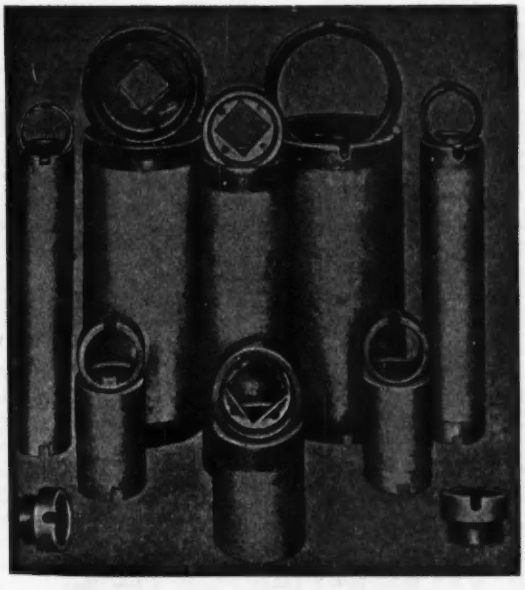

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MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, November 29, 1944.

BLANC FIXE—Quotations on blanc fixe continue unchanged. Demand is reported fair. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is heavy. Supply situation is reported relatively good at this date. Quotations continue unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Demand continues very heavy. Production high but supply is inadequate. Market is tight. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY—Quotations on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand reported heavy with essential requirements met. Paper allocated 43,196 tons in final quarter. Quotations are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—The rosin market reports prices unchanged on most grades this week. "G" gum rosin is currently quoted at $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is currently quoted at $5.75 per 100 pounds, in barrels, at New York. Seventy per cent gum rosin size is currently quoted at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake are reported unchanged for the current week. Consumption is reported moderate for the week. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Very heavy demand continues for all-over requirements and market is tight. Shipments in bulk prompt; delivery in bagged lots delayed. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Current corn receipts very light. Prices very firm; Government loan plan may reduce market supply. Starch prices firm. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand reported good. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.85 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand active. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand good. Domestic grades are currently quoted at from $16 to $21 per ton at mines; Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract...	*$58.00	@	—
Sheets	66.00	"	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping...	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag.....	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1.....	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½....	1.00	"	—
White No. 2.....	.90	"	—
Anti-Tarnish M.F..	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet....	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.....	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute.....11.25		@	—
No. 1 Manila Wrapping, 35 lb.....	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.....	5.75	"	6.00
Boards, per ton—			
News *48.00		@	—
Chip *48.00		"	—
Sgl. Mla. Ll. Chip	*60.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards...	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @ $47.25
100% Rag	32.20 "	37.75	33.35 " 39.25
85% Rag	.... "	....	29.90 " 35.00
75% Rag	23.00 "	27.00	24.15 " 28.25
65% Rag	.... "	....	22.80 " 27.75
50% Rag	18.70 "	22.75	19.90 " 24.25
25% Rag	16.40 "	20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds		Ledgers
No. 1..	$10.55 @	$12.75	$11.70 @ $14.25
No. 2..	9.65 "	11.75	10.80 " 13.25
No. 3..	9.20 "	11.25	10.35 " 12.50
No. 4..	8.90 "	10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated...	$13.65	@	$15.50
No. 2 Glossy Coated...	12.40	"	14.00
No. 3 Glossy Coated...	11.60	"	13.25
No. 4 Glossy Coated...	11.15	"	12.75
No. 1 Antique (watermarked)	10.25	"	11.75
No. 2 Offset	9.60	"	11.00
A Grade E. F.....	9.35	"	10.75
A Grade S. & S. C...	9.60	"	11.00
B Grade E. F.	8.85	"	10.25
B Grade S. C.	9.10	"	10.50
C Grade E. F.	8.55	"	9.75
C Grade S. C.	8.80	"	10.00
D Grade E. F.	8.25	"	9.50
D Grade S. & S. C. ..	8.50	"	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite.....	$86.00
Unbl. Softwood Sulphite.....	74.00
Bl. Hardwood Sulphite.....	83.50
Unbl. Hardwood Sulphite.....	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich ..72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate...	82.00
S. Semi Bleached Sulphate...	75.00
N. Unbl. Sulphate.....	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	72.00
Unbl. Soda	68.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area).....	10.50
West Coast (out area).....	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area).....	9.50
West Coast (out area).....	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1..	6.50	@	7.25*
Silesias No. 1.....	—	"	5.75*
New Unbleached...	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

We Are Looking for Trouble

Often little things mean more work for the machine hand, the superintendent, or the purchasing agent. Does some little thing give trouble on your screens? Write us about it! Or ask to have a *UNION* representative call!

We may be able to help
and we'd sure be glad to try.

UNION SCREEN PLATE COMPANY
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(ASSOCIATED WITH UNION MACHINE CO.)

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CLINTON

- QUALITY
- UNIFORMITY
- SERVICE

STARCHES
SPECIAL GRADES FOR BEATER, CALENDER AND TUB SIZING

CLINTON COMPANY CLINTON, IOWA

Old Rags

White, No. 1—			
Repacked	*2.80	@	—
Miscellaneous	*2.20	@	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	@	—
No. 2	*1.45	@	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¾
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¾

Domestic Rags (Old)

White No. 1—Repacked	3.00	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—			
Sisal Strings			.04
No. 2 Clean bright—			
Sisal Strings			.03
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, etc.	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½	"	—
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	5.25	"	—
Jute Cer tt Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	2.75
South American	—	"	3.00

Misc.	2.15	"	
No. 1 White Ledger	2.30	"	—
No. 2 Ledger, colored	2.00	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½	"	
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—

BOSTON

Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	
Aust. Wool Pouches	—	"	3.50
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¾	"	.05
New White No 1	.06¼	"	.06
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06½
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¼	"	.06
Silesias No. 1	.06	"	.06½
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06¾
Blue Cheviots	.05½	"	.06
Fancy	.02¼	"	—
Washable	.02¼	"	—
Khaki Cuttings	.02¼	"	.03
O. D. Khaki	.03½	"	.03¾
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.06¼	"	.06¾

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	1.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65		
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—